Dreams in a Northern Landscape
The Re occupation of Canada's North

by
Suzanne Ashley Gibson

A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Master of Architecture

Waterloo, Ontario, Canada, 2009

Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

The vision for this work first sprung from Farley Mowat's book, Canada North Now, in which Mowat questions why Canada's north has never been used for animal husbandry despite having the capacity for such a use. Harvey Payne's study "A Feasibility Study of Northern Animal Husbandry a Land Use in Northern Manitoba," written for the Department of Mines, Resource and Environmental Management, confirms northern Canada's carrying capacity and consult with northern communities about the possibilities of introducing animal husbandry. The feedback provided in community meeting conducted by Payne, coupled with the initial success of reindeer husbandry in Alaska and the past success of reindeer husbandry has seen in Europe, has provided the backbone upon which this thesis is based.

This work examines the natural feature and ecologies of the Northwest Territories and studies the history of the aboriginal people who call this region home. Inspired by Norval Morrisseau's work, a series of paintings are created that explores the traditional meaning and cultural importance of life on the land. By taking a step back and looking at the principles of traditional knowledge, upon which satisfaction and pleasure are based on a close bond to ones family, and a close partnership with the land and other living beings, a proposal is made that offers an alternative lifestyle in Canada's north.

Through the introduction of reindeer husbandry it would be possible to live off the land in a manner that is more in tune with traditional values, while at the same time creating employment opportunities in northern communities. The proposal offers an alternative life style that is nomadic in nature, the design is a simple tent structure based on traditional vernacular architecture of the region, that can be manipulated to suit the users' needs. A low-key meat industry would reshape the landscape in a positive manner through conscious consideration. The semi-permanent base of the structure would create new landmarks from which the cultural fabric can be hung. Unlike existing settlements that are based on outside ideologies, this design is intended to exist in harmony with traditional values and the existing landscape.

Acknowledgements

Thesis Supervisor
Terri Meyer Boake
Associate Director
School of Architecture, University of Waterloo

Committee
Lloyd Hunt
Adjunct Associate Professor
School of Architecture, University of Waterloo

Val Rynnimeri
Associate Professor
School of Architecture, University of Waterloo

External Reader
Greg O. Michalenko
Assistant Professor Emeritus
Environmental and Resource Studies, University of Waterloo

Dedication

I would like to thank my mom for instilling in me great ambition, her encouragement, the countless hours she spent reading over my work, and our many long discussions.

In loving memory of Haillie, whose courage and unabashed love for life, continues to inspire me.

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Prologue

"Somewhere far to the north of Newfoundland, the St. Lawrence Seaway, Place Ville Marie, the Macdonald-Cartier Freeway, the bald-headed prairies and Stanley Park lies an unreal world conceived in the mind's eye, born out of fantasy and culled in myth. Home of the ice worm and the igloo, of mad trappers and mushing Mounties, of pingos and polar bears, of the legions of the damned conjured into being by Robert Service, its voice is the baleful rustle of the aurora borealis, the eerie howl of Jack London's malamutes and the whining dirge of Canadian Broadcasting Corporation wind machines. It is a 'white hell,' 'the ultimate desolation,' 'a howling waste land,' 'the land God Gave to Cain.'"[203]

Canada's north has been the source of a fanciful literary mythology that uses the north as a setting for great adventures into the unknown and untamed wilderness. It is a place where heroes venture into an uninhabitable flat and formless ice-filled landscape to test themselves and endure and conquer countless hardships, overcoming the impenetrable cold and endless darkness of polar nights. As an epic, this great northern unknown is the perfect setting, and many authors have played on the theme creating an uncanny fairy-tale world. Jack London is one such author who writes of the north as a place of emptiness, "a weary journey beyond the last scrub timber and straggling corpses, into the heart of the barrens where niggard north is supposed to deny the earth."[204] In London's fanciful depictions of the North, only polar bears can survive the unforgiving landscape, the aboriginals who the hero encounters along the journey are talking oracles who guide the adventurer's quest. Many of these literary vices have been taken at face value, which has lead to a passive acceptance and general misunderstanding.

Farley Mowat, a Canadian northerner and author, suggested that these mythologies were used to heed competition and to conceal from the rest of the

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203 Mowat, 1979. Pg. 9

204 London, 1963. Pg. 11

country the brutality and unmoral actions that were occurring in Canada's far reaches beyond the view of the general public. Misunderstanding and ignorance are not the only ways in which many Canadians have demonstrated their indifference to Canada's north. Since the first European explorations into the North, Canadians have lacked interest and involvement in the vast territory that lies north of 60. The nation has stood by and continues to stand by while others exploit the natural wealth from the land, taking resources and profits abroad without considering the long-term consequences. Fortunately, or perhaps unfortunately, for those who call the north their home there has been a shift; over the past several decades there has been a renewed interest in the North, and an increase in the general awareness of northern issues.

Canadians' disconnection with the North has had a deeply rooted history that begins with the first northern explorations. Interestingly, those who first came to explore the northern unknowns were not Canadian but rather Europeans. British, French, Scandinavians, Germans, and Portuguese — they were the first to venture into the great unknown, the first to map and lay claim to the land that today forms half of Canada's landmass. These explorers were later followed by trappers and whalers who came to the north to exploit Canada's natural resources, taking what they wanted from the land — the resulting wealth out of the North and out of country, a pattern that still remains today. The first to "develop" the North was the Hudson's Bay Company, Revillon Frères, and CanAlaska trapping companies, based out of London, Paris, and Seattle respectively. The trappers who traded with these companies were almost exclusively northern Europeans, while those who explored and exploited the arctic seas were Scottish and American whalers. The missionaries, who soon followed the trappers, were also of European decent: Belgian, French, and English. Those who came into the North came with the intent of exploiting the North's resources; whether it was fur, whale oil, or human souls, they took what they desired and left without concern for the long-term impact their actions had on the people of the North or their land.

When the time came to begin policing the North, Mounties were recruited directly from England and Scotland. Like the trappers, whalers, trading companies, and missionaries, the police had little regard for the North. They too came and policed for a short period of time and then left, often returning to their countries of origin. Those who came to North to exploit, "develop," and police felt little connection to the people and the land. The north was not home; they were there for a short period of time to take as much as possible and then they would leave again. Often, these short stays did more harm than good to the people who made the North their home.

Sadly, not much has changed since the first Europeans inundated the North to exploit natural resources, amassing wealth before moving on. Today the myths of the North as useless land no longer exist in the general conscious; the North is being seen as a valuable asset, rich in natural resources. It's still seen as barren land that the general population cares little about, but since there are valuable resources, primarily oil, and precious minerals, to exploit the north has been given a monetary value. In 1966 Prime Minster John Diefenbaker launched a campaign to "enrich the nation by making available the Canadian Arctic Golden Cornucopias of minerals, fossil fuels and other resources."[205] Following Diefenbaker's agenda, government agencies flocked to the North in an effort to exploit natural resources on a massive scale. At the same time of this renewed interest a one - time publication was produced called "Opportunities in Northern Canada," in which the editor expressed his views on the value of the North:

> "We are committed to a full-scale invasion of the North, and we [will] use all the weapons at our command in order to ensure our success […] The task of developing northern Canada is so gigantic that it staggers the imagination. Capital and human resources will be required in such degree as to 'boggle the mind.' It is going to require the combined efforts and resources of all levels of government and the private sectors. I urge that

205 Mowat, 1967. Pg. 126

> they work together closely so the North is developed aggressively […] I do not agree with those people who would not share our resources with others, particularly our brothers the Americans. Without their help we would still be 'hewers of wood and haulers of water."[206]

To think of the North in this manner is truly disheartening. The term invasion brings to mind warfare. The conquest of the North which would destroy both the land and the people whose culture is critically linked to the land. What really boggles the mind is not the degree to which resources would be needed to "develop" the North, but that at the moment, non-renewable resources are being depleted, not because Canada needs them, but because there are buyers who are interested in buying them. The resources of the North are being rapidly depleted, out of greed and without any regard for future needs. Communities are being built for the sole purpose of extracting wealth as quickly as possible and once the resources are depleted these communities are abandoned. Common sense, foresight, and experience are being ignored by those in power who are bending to the wishes and demands of large corporations. Canadians have allowed and continue to allow multinational corporations to lay siege on the North taking valuable resources out of the country and leaving behind a damaged and scared landscape that will take generations to recover, if it can at all. A recent study suggest that the once massive Beverly caribou herd population has fallen 98 % in the past fourteen years.[207] Although it is not known for certain why there has been such a sharp decline in the herd number, it is believed that the increasing industrial activity on the tundra coupled with climate change is the cause. The entire northern ecosystem is dependent on caribou, not to mention the cultural importance of the caribou to many northern aboriginal groups. This staggering population decline maybe irreversible, yet few Canadians outside of the North seem to be concerned and the government continues to allow mining to take place around the caribou's migratory routes. There seems to be a general disillusion that Canada is benefiting from senseless exploitation. A new myth has been formed; in this modern myth, the North is rich in resources that will benefit the rest of the nation. The land itself, the life and culture which it supports are not included in this new myth; it is seen much as it always has been seen: a useless, vast expanse of uninhabitable land that can be used in anyway seen fit, as one oil company executive explains:

> "People down south have got to have the hydrocarbons. They want and they want them badly. It's going to be no skin off their noses if we have to mess things up a little bit up there to get them what they want. Nobody is going to give much of a damn as long as we deliver the goods. Why should they? They [the islands] are away back of nowhere and they aren't worth anything to anybody anyhow. At least we plan to give them some real hard-cash value!"[208]

This complete lack of concern is echoed a thousand times over in the collective conscious, whether we admit it to ourselves or not. It can be seen in the platform drilling that is taking place in the Arctic Ocean, a truly dangerous and potentially disastrous activity. The unpredictable movement of heavy ice and the depths of the drill required in deep water makes drilling extremely difficult. A single blowout and the entire Arctic ecosystem will be at risk. The deep ice sheets make clean up nearly impossible and the currents would disseminate oil as far south as the Gulf of Mexico, and east to Europe and Asia, and still, despite knowing the deadly consequences a blowout would have to the oceanic ecosystems, the Canadian government continues to allow drilling. Another similar example can be seen in pipelines that have been proposed and that are now under construction. The pipelines pose similar threats to local ecologies, and yet are still being built. As a nation, Canada is blood -letting its natural wealth while destroying sensitive ecologies, where minor damages can

206 Mowat, 1967. Pg. 189

207 .CBC News. 1 Dec. 2008.

208 Mowat, 1967. Pg. 124

take 150 years to repair. And with some of the damage that is currently taking place, there is no telling how long, the natural processes will take to repair the extensive destruction, or if at all.

Those northern aboriginals whose land is being destroyed have began to band together to fight for the survival of their land and their culture, both of which are at a heightened risk of being lost. Despite the blind-sighted approach to dealing with Canada's north by some, the voice of the North is beginning to be heard and there seems to be an increase in general awareness by others. The environmental movement and the aboriginal rights movement have brought to light issues affecting Canada's north. Margaret Atwood describes the current atmosphere:

> "It's both depressing and cheering to note the changes that have taken place since 1966. On the one hand, more damage and devastation, both natural and social, with global warming as a contributing factor. On the other hand, as increased optimism, at least among the people of self governing Nunavut, recently created in the eastern Arctic. Inventiveness and creativity there have been given a big boost… [But] as more and more people have come to agree, it's a race against time and time – not just for the north, but for the planet - time is running out."[209]

It is not hard not to imagine that humanity is facing an uncertain future. Nunavut has begun to show the world that it is possible to successfully live in harmony with the land by creating a solidified autonomy, whose goals are to benefit and empower the people while taking stewardship of the land and protecting it for future generations. By learning from the tradition of Canada's northern aboriginal aspirations and future goals, there are other approaches that can be explored and lessons learned, that can be reached in harmony with nature, that use the resources that are available without exploiting them unnecessarily. As Atwood describes, if changes are not made, the alternative choice — staying on our current path presents a future that is more difficult to fathom — one which is bleak and uncertain.

209 Atwood, 2002. Pg. 1-10

Introduction: Remembered Earth

"Once in his life a man ought to concentrate his mind upon the remembered earth. He ought to give himself up to a particular landscape in his experience; to look at it from as many angles as he can, to wonder upon it, to dwell upon it.
He ought to imagine that he touches it with his hands at every season and listens to the sounds that are made upon it. He ought to imagine the creatures there and all the faintest motions of the wind. He ought to recollect the glare of the moon and the colors of the dawn and dusk."[210]

This thesis is in many ways a utopian vision of what Canada's north could be. The vision first sprung from Farley Mowat's book, Canada North Now, in which Mowat questions why the North has never been used for animal husbandry despite having the capacity to be. He finds the answer a simple one, in that it is not "[…] economically viable. On analysis this turns out to mean that there would be little likelihood of quick and easy profit for those who believe the North exists primarily to be exploited by southerners."[211] Rather than dwelling on the monetary value of the North, a change of perspective is needed if the North is going to survive. Success should be a measure of happiness and quality of life of those who call the North their home.

Success can be found by taking a step back and looking at the principles of traditional knowledge, upon which satisfaction and pleasure are based on a close bond to ones family, both nuclear and extended, and a close partnership with the land and other living beings where individuals are a part of a complex system, not above it. The quality of life the North has to offer needs to surpass the dollar value of its resources, not just to the northerners but also to the rest of the country as the current rate of degradation cannot be sustained without ecological collapse. Barry Lopez, in his book Arctic Dreams, brings to the forefront the question of individuals'

210 Lopez, 1986. Pg iii

211 Mowat, 1979. Pg. 94-95

perceived value of the North,

> "[…] Confronted by an unknown landscape, what happens to our sense of wealth. What does it mean to grow rich? Is it to have red-blooded adventures and to make a fortune, which is what brought the whalers and other entrepreneurs north. Or is it rather, to have a good family life and to be imbued with a far reaching and intimate knowledge of ones homeland, which is what the Tununirmiut told the whalers at Pond's Bay wealth was. Is it to retain a capacity for awe and astonishment in our lives, to continue to hunger after what is genuine and worthy? Is it to live at a moral peace with the universe?" [212]

These questions posed by Lopez are not so easily answered, but by looking back and exploring the history of Canada's northern aboriginal population within the Northwest Territories, and by examining traditional values, life can be understood differently, that western values that base success on acquisition and monetary gains can be temporally set aside and the reader can open up and appreciate an alternative land use for Canada's north that is more in keeping with traditional values. Where success is a measure of one's heart and soul, where the flourishing of human and non-human life has value, where richness and diversity of life goes hand in hand, to live on the land within the means of the land is to truly live a successful life.

With these goals in mind, the introduction of a low-key meat industry would allow those who choose to take advantage of it the opportunity and the ability to reoccupy the land. This proposal would not generate the same revenue as drilling for oil or mining precious mineral, but these current industries are not sustainable and their repercussions are so wide spread that northern ecologies are on the cusp of collapse. These activities are being blamed for the decline of the once - great caribou herds that throughout history have literally been and for many continue to be the life blood of the north. A realignment of our current outlook and values is needed, by following traditional values and ethics to follow a more dignified course in the years to come. The difficulties facing Canada's north are not isolated; they are a global issue.

> "The cold view to take of our future is that we are therefore headed for extinction in a universe of impersonal chemical, physical and biological laws. A more productive, certainly more engaging view is that we have the intelligence to grasp what is happening the composure not to be intimidated by its complexity and the courage to take steps that may bear no fruit in our life time."[213]

A low-key meat industry in place of these less sustainable industries would support local economies while allowing human life and culture to flourish along side non-human life.

212 Lopez, 1989. Pg. 13 -14

213 Lopez, 1989. Pg. 52

Defining the North

Defining the North, where it begins and ends, is no easy task; the term North has different meanings, and associations depend on personal perception and experiences. For some, north of 60 is considered North, the boundary of Canada's three territories Yukon, Northwest Territories, and Nunavut. The disadvantage of using this political boundary is that it ignores similarities in climate, physical conditions, economic structures, and settlement patterns that are shared by northern parts of the country: Labrador, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. Others would describe the North as beginning in the upper reaches of the taiga, the broad band of coniferous forest that run east-west across Canada. This definition, although it does take into account the environmental conditions, is even less clear as there is no moment where the coniferous forest stops and the tundra begins; rather, they overlap and the conditions melt into each other: the coniferous forest becomes the "land of little sticks," where tree line meets the barrens, or Farley Mowat calls them, the arctic prairies, as they are anything but barren.

The Canadian government has a more technical approach to defining the North called Polar Values (VAPO), a system developed to define the degree of "northerness." Created by Canadian geographer Louis-Edmond Hamelin in the 1960's, this system is based on a number of natural and human factors including: latitude, summer and winter temperatures, types of ice, total precipitation, natural vegetation cover, accessibility by means other than air, air services, population, and degree of economic activity. For each of these criteria the given community is evaluated and assigned a number between 0 and 100, 100 being extreme "nordicity". Any community that receives a total more than 200 points is considered to be located in "the north." Within this system, there are varying degrees of northerness. The North Pole is considered to be in the extreme north, having a value of 1000.[214] The North is divided into these categories: near north, middle north, far north and ,

214 Graham, Winter 1990. Pg. 24.

FIG.2.1. Arctic sun dogs, a phenomen caused by light being refracted through ice crystals.

extreme north. The divisions are used in determining regulations that affect these areas including environmental protection, infrastructure, and growth.[215]

The Polar Values system takes into consideration many of the factors that other definitions of the North fail to account for. However, this number-based system for determining what is North is lacking in the human aspects of living in Canada's north. For those who know the North, they would disagree that the North can so easily be defined in terms of degree-days, depth of permafrost, and number of flights to and from a given destination. Rather, they would describe the North as a state of mind — you know you have entered the North the moment you feel that you have entered another world unlike the one you have come from.

215 Hamelin, 1979. Pg. 99.

The Landscape

Regardless of how the North is defined, it remains a vast landscape, the magnitude of which is difficult to completely comprehend. The taiga and tundra make up the largest portion of Canada, approximately 3 million Km^2 or just over half of Canada's landmass.[216] This enormous area that is Northern Canada is often thought of as flat and barren; however, in reality, the landscape is anything but flat and formless. The glacial movement that took place during the last ice age 10 000 years ago carved and sculpted the earth's surface, creating rich variations. The Keewatin glacier completely covered the central region of northern Canada, with the exception of northwest corner. This once mountainous region began to transform under the weight of this 325 m thick glacier.[217] As ice and water was forced from the glacier's centre, mountains were slowly worn into smooth undulating hills, and rock that once formed the mountain's base was left exposed, forming the Canadian Shield, the oldest exposed rocks on earth.

The gauged, pitted, and scarred surface that was left behind formed an elaborate pattern of water - filled valleys and deep coastal fiords. The retreating glacier littered the land with sand and gravel, creating long sinuate moraines, ridges, drumlins, and eskers. It was also during the glacial period that the permafrost that exists today was created. In the extreme north the permafrost reach 1 300 m below the earth's surface. As far south as southern Manitoba, where permafrost can be found a meter below the surface.[218] The North as a flat formless landscape can't be further from the truth; the landscape is as diverse as it is vast.

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216 Mowat, 1967. Pg. 18

217 Encyclopedia Britannica Online. 30 Apr. 2009

218 Mowat, 1967. Pg. 20

Ecologies

"For centuries, Aboriginal people of the boreal forest region of Canada's western Sub Arctic had lived a stable life, moving with the seasons and living interdependently with the land and its resources. People lived in precise harmony with the natural environment, understanding its bounty and its dangers and the need to be respectful of the power inherent in both."[219]

The ecologies within the North are as unique and diverse as the landscape. Interestingly, the idea of land and ecologies has undergone some drastic changes in the past several decades, moving away from a more rigid approach towards a holistic one, in which systems are interconnected and woven to form a greater, more complex system, as described by ecologist Fikret Berkes:

> "Ecological awareness will arise only when we combine our rational knowledge with an intuition for the non-linear nature of our environment, such as intuitive wisdom is characteristic of traditional non-linear cultures, in which life was organized around a highly refined awareness of the environment."[220]

This holistic approach to ecology is not new; it has been practiced for centuries by countless aboriginal groups. Northern Canadian aboriginal groups refer to ecology as "knowledge of the land."[221] The Dogrib, word for the environment is ndè and although most often translated as "land," the actual meaning is far more complex and refers to everything in the environment both physical and living and the link they share, both having a life and spirit that are dependent on one another.

In the North, the dependence of and interconnection of various ecosystems is clearly visible to those who live off the land, and it is easy to understand how the word ndè came to have its meaning. In a climate that is harsh and unforgiving, people and animals moved in time with the natural cycles of the environment, moving from

219 Pin, March 1993. Pg. 43.

220 Berkes, 1999. Pg. 3

221 Berkes, 1999. Pg. 6

FIG.2.2. Delicate plant life can thrive in an area no larger than the space between your outstretched arm, as long as there is a bit of shelter and a constant source of moisture.

one ecosystem to another, finding substance in different locations at different times of the year. Within the Northwest Territories there are numerous ecologies that are woven together creating a beautiful and diverse landscape that in a broad sense, can be described as having lowlands heavily forested with large spruce, poplar, and birch trees; sparse forest; rocky outcrops; raised beaches; fresh water lakes; ponds and rivers; and sedge meadows. Harold Strub describes his trek across the varied landscape:

> "We have not seen birds for weeks, nor insects. Here and there some tufts of greenery beat the odds of polar desert life at high elevations. But the few flower stems have long since wilted. Even with hours of muddy plateau behind us the perspective ahead scarcely changes […] everything around us seems to be rock or water. But there are more signs of life. The green patches are larger. […] The north valley wall, […] gives way to the lowland plain beyond. What an Eden lies before us! Life here jostles for space. In the dusk below a stratum of metal-grey cloud, raised beaches, freshwater lakes, ponds and sedge meadows lie stranded in a shallow sea of vegetation. Greenness of a striking intensity and variety assaults retinas […] Ankle – height willows cling to beach gravel. White foam whipped up by the wind laps against the lee shores. Patches of reindeer moss – really a lichen – mix with patches of real moss, green, moist, and deep. Yellow poppy, purple saxifrage, orange-, lime-, and black colored lichen thrive among the scattered boulders and exposed traces of charcoal grey bedrock. No footprints here. The rock is too hard and the moss too resilient to note the passage of feet."[222]

Strub's passage through the landscape is a saga unto itself; he describes isolation, bareness, and breath - taking beauty, all these conditions coexisting together. As shown in, FIG 2.2, beautiful greenery will flourish wherever there are nutrients

222 Strub, 1996. Pg. 33

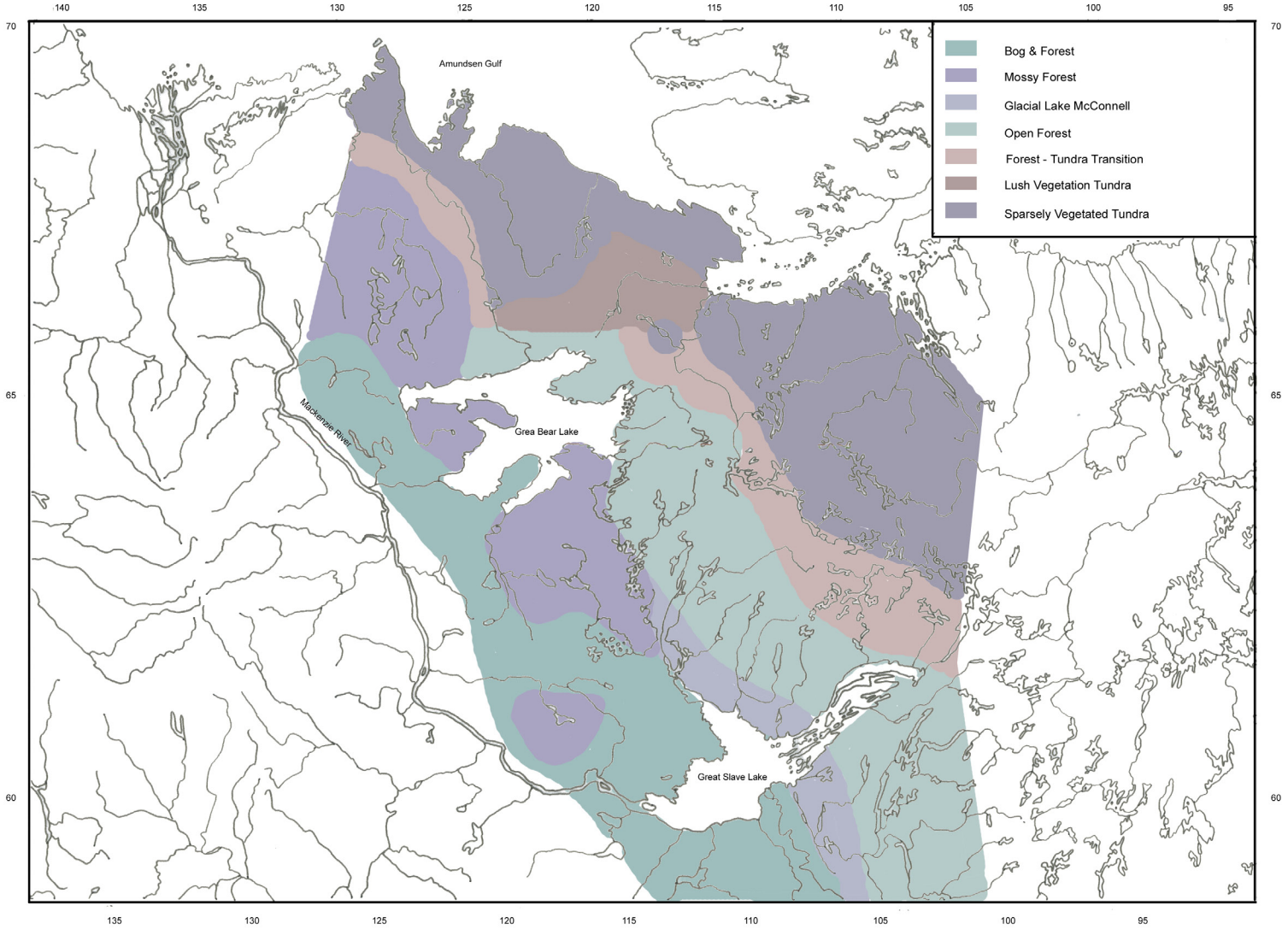

FIG.2.3. Ecological zones

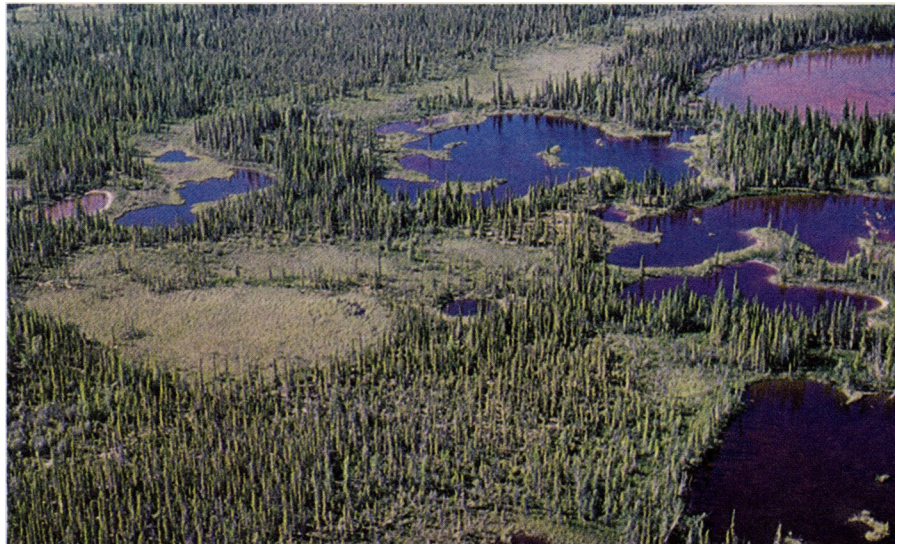

FIG.2.4. Bog and forest, south of Lac la Martre

FIG.2.5. Mossy forest, north of Colville Lake

FIG.2.6. Glacial lake McConnell, Near Ft. Rae

FIG.2.7. Open forest, northeast of Yellowknife

FIG.2.8. Forest - Tundra transition, northeast of Beniah Lake prime — wolf denning esker

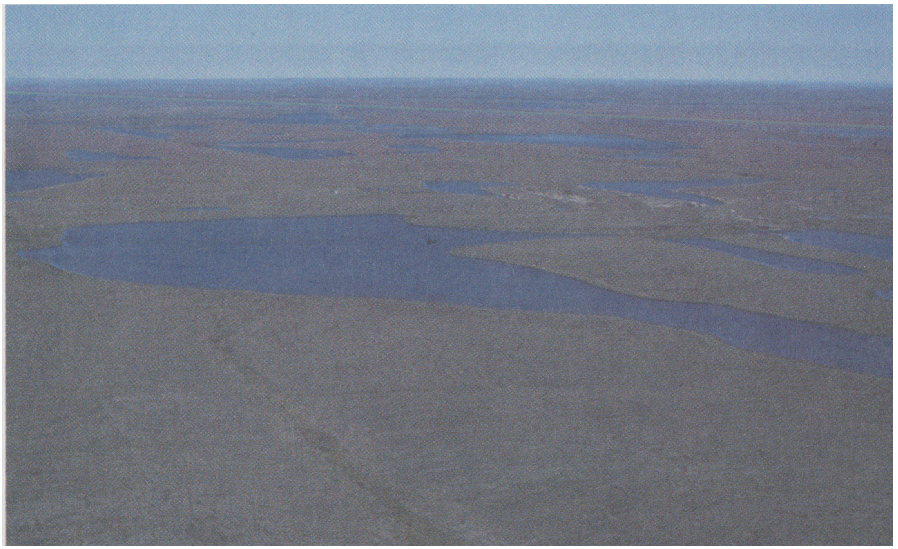

FIG.2.9. Sparsely vegetated tundra, near Bluenose Lake

and moisture, sometimes in the most unexpected places. There are five distinct ecosystems in the Northwest Territories: bog forest, mossy forest, glacial lakes, forest tundra transition, and tundra. Each of these ecosystems differs from the others but all are interdependent. A generalized description of each overall condition is provided; however, it does not take into account the smaller micro-systems that exist within each (see FIG.2.3).

The bog forest condition is known for its numerous shallow lakes, black rivers, and bogs, as well as extensive spruce and jack pine forests. (see FIG.2.4) Terrestrial and arboreal lichens are found in abundance in mature forests. This region is also known in the winter for having strong prevailing northern winds and extremely deep snow drifts. These conditions are able to support moose, woodland caribou, wood bison, black bear, geese, and most aquatic and forest fur-bearing species. The mossy forest, like the bog forest, also has extensive spruce forests and supports similar species with the exception that it is also able to support wolve, wolverine, red fox, and grizzly bear. The mossy forest differs by having extensive gravel moraines and a deeply carpeted forest that provides shelter from strong prevailing winds, providing ideal protection during the winter months (see FIG.2.5). The glacial lakes in particular Lake McConnell, are unique in that unlike other lakes in the area, were created by glacial deposits. The silt provides desirable growing conditions for willows and lush aquatic and semi-aquatic vegetation, creating an ideal habitat for moose, bears, fur-bearing species, red fox, lynx, ptarmigan, hare, wolve, and waterfowl (see FIG.2.6). The forest tundra transition band is between 16 and 80 Km in width. The flora found in this area varies greatly depending on the elevation and fire history in a given area, but typically species from both the forest and tundra can be found in the area (see FIG.2.8). Last, the tundra is the dominant landscape of Northern Canada, and is the simplest ecosystem found in the North, and the most susceptible to damage; the decline of one species will directly impact all other species. The sparse vegetation of the tundra is able to support: caribou,

FIG.2.10. Sparsely vegetated tundra, Hornaday River headwaters

FIG.2.11. Lush Vegetation tundra, Rae River Valley

bear, ground squirrel, red fox, wolverine, and musk ox (see FIG.2.9 – FIG.2.11).

Each of these ecologies exist within a larger, complex system that is interdependent and necessary for the survival of many species which rely seasonally on varying ecosystems, with species often moving from one ecosystem to another depending on the time of year. The Northern aboriginals, like the countless other species, were reliant on various ecosystems moving through in harmony with the natural cycles. To those who lived off the land, they, themselves were apart of this system. The idea of wildlife and nature did not exist; they were all a part of a larger entity and a singular world in which all physical and living beings belonged together. At present, despite changes in traditional economies, many Northern aboriginals still participate in traditional activities such as: hunting, fishing, and trapping, following ancestral routes that are marked in time by the rhythms of nature.

The People and Their History

Kinship

The basic building block and commonality within traditional Athapaskan groups is the nuclear family, which is built "link by link through primary relative ties between marital pairs."[223] These extended families are known as kinship groups. Kinship groups would be comprised of three to four families linked to one another though blood and marriage. Within the group, each member would have a clearly defined role based on gender and age.

The key to a group's survival was fluidity of the kinship group — the group had the ability to adjust and make changes as necessary — mobility, and the capability to coalesce and fragment the kinship groups according to season and resources available ensured the group's success. It was not uncommon for members to move from one group to another, resulting in social alliances being formed between different groups in the region; it also allowed members of differing opinions to separate. These related alliances were known as the local band.

Local bands form a community body, named according to the region they occupy. This larger group would assist other kinship groups in the band should they fall upon hard times. Within this social system there were also additional layers that existed within a larger social network including regional band and task groups. The regional band is the maximum social territorial division made up of a number of local bands, and is named after the region it occupies; for instance, the Dogrib would be considered a regional band. The name refers to the locus of the area in which the greatest number of occupants of that group can be found for most of the year. Finally, there were task groups; this is usually a short-term assembly that was made of unrelated kinship groups from a variety of local bands. Task groups are brought together for a specific purpose, such as to assist each other in a hunt. In summary, a kinship group belongs to a local band, which is part of a larger regional band. This interwoven social system aids in ensuring the groups survival.

The importance of the kinship bond remains strong; in a study conducted by the Canadian Mortgage and Housing Corporation (CMHC), 95% of residents

223 Strub, 1996. Pg. 13

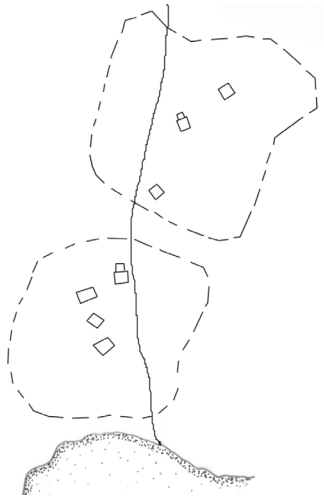

FIG.3.1. Traditional campsite family groups: in this example two kinship groups were separated by a river. Using natural features to separate different family groups was common.

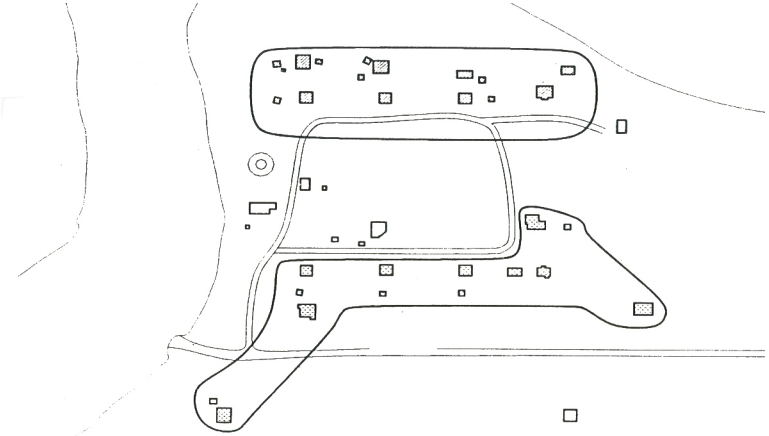

FIG 3.2. Kakisa Lake family groups: community grew on its own without outside influences. Instead of using natural features to separate different kinship groups, the road and space between the roads separate different kinship groups. The extent of the two major kinship groups is circled. As demonstrated in this example, living close to kin is still preferred.

in Rae would prefer to live near their kin.[224] The problem facing many Northern communities is that housing is provided based on a rigid grid that takes into account minimum fire separation; the delivery of services; and housing allotments which are based on availability rather than family ties, meaning that housing does not take into account the social fabric of the culture for which it was intended for, and hence has alienated the occupants. Western culture and traditional values are at odds with one another, while western values focus on individual achievement, traditional values tend to be based on family achievements, as seen in description on kinship. As described, traditionally families worked together towards common goals, such as a successful harvest that stockpiled enough meat and fur for the coming winter — together, families would share in the joy of knowing they have created this success. An alternative to southern housing typology, such as nomadic living, would offer an option that is more in keeping with the traditional social fabric, and would allow for fluidity and flexibility, allowing families to live near their kin should they desire and accommodate changes within the family structure such as marriage. This alternative approach to living would be more in keeping with traditional values; families could share in common tasks and in doing so, would further strengthen their family bonds, creating a peaceful, and fulfilling lifestyle that puts greater value on family ties.

224 Diakun, 1997. Pg. 267

Social Groups

Within the Northwest Territories Sub arctic there are four main cultural groups. Dogrib is the largest of four groups and as a result, will be the primary focus. The other groups are: Slavey, Chipewyan, and the Metis. Each of these groups share a common ethical background; however, differences exist in the area they traditionally occupied, language, social structure, and historical influences.

The Dogrib people have a rich and vibrant culture in which members share a common landscape, language, and way of life. Belonging to the Northern Athapaskan language group, they are the largest aboriginal group in the Northwest Territories. June Helm, an anthropologist specializing in Sub arctic aboriginal groups, describes the Dogrib as:

> "… an Athapaskan tribe of the Mackenzie Drainage Basin, who traditionally occupied a wide area between Great Slave Lake and Great Bear Lake. In their own language they refer to themselves as Done."[225]

According to Helm the Dogrib traditionally inhabited the western Sub arctic, with the physical north–south boundaries of their territory as Great Slave Lake and Great Bear Lake, the east boundary the Mackenzie River lowlands and the west boundary the Contwoyto, Aylmer, and Artillery lakes. These physical boundaries are not firm, but flexible and demonstrate a general area in which the Dogrib could be traditionally found throughout the majority of the year.

The Slavey, unlike the Dogrib and Chipewyan, were historically never a single band; rather they are an Athapaskan group that accepts and uses the title. According to anthropologist Michael Asch, their territory occupied:

> "The land along west end of Great Slave Lake, and the area south and west of the lake bound Hay River to the east and the Liard drainage basin to the west, and the Mackenzie River valley north to Great Bear River"[226]

From pre-contract period until the 1940's they continuously occupied this general

225 Helm, 1981. Pg 299

226 Asch, 1981. Pg 338

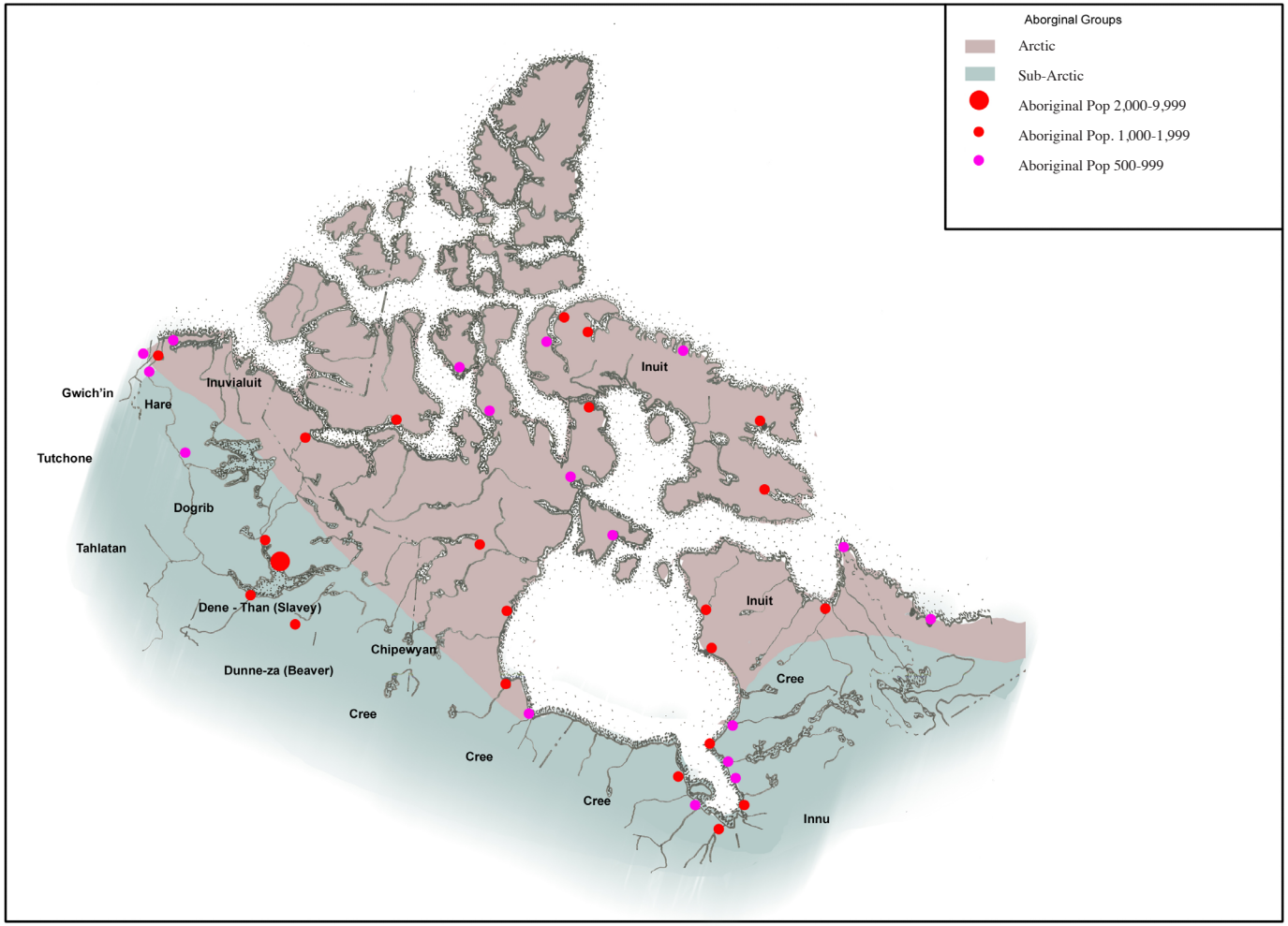

FIG.4.1. Demonstrates the major cultural groups in Northern Canada, as well as population distribution of Northern Aboriginals

area in mobile settlements similar to the Dogrib. The only difference that sets this group apart was that once a year they would gather in large groups as described by Asch:

> "In late pre-contact times […] the primary economic and social unit was the local group of perhaps ten to twenty individuals […] It is most likely that local groups lived in semi – isolation from each other for most of the year, staying with a small geographic zone centered near a fish lake […] However, sometime during the summer when subsistence conditions permitted, local groups came together at a central camp ground such as at Great Slave Lake where they formed a temporary assemblage of perhaps two hundred to two hundred and fifty people; where they formed a temporary assemblage that lasted until conditions again necessitated dispersal."[227]

The fluidity and relationships formed through kinship and marriage allowed for the success of this group, and their fluctuation of gathering size provided for the group's social and physical needs.

The Chipewyan, like the Slavey, also gathered into larger groups and dispersed with the yearly cycle of the caribou. Anthropologist James Smith describes their social structure:

> "During the dispersal of the herds in winter and summer, the regional band separated into a number of smaller local bands, although larger aggregation could gather even at these times […] The regional ban historically has consisted of about two hundred to four hundred or more individuals."[228]

As late as the 1970's these large hunting groups continued to occupy their traditional land. Unlike the other groups, the Chipewyan are a northeastern group and their territory was far more extensive, extending from near Hudson Bay to north of the Arctic Circle near Copper Mine River, and historically they inhabited areas as far west as the area between Great Slave Lake and Great Bear Lake. As a result of having a range that extended to the far east, the Chipewyan were the first of the three groups to have contact with the Europeans and later acted as guides and middle-men between the Europeans and the other groups.

227 Asch, 1981. Pg 339

228 Smith,1981. Pg 276

Life on The Land

Traditionally, fate was interwoven and interdependent with the natural ecologies of the region; life moved in time with nature. For centuries, aboriginal groups' rhythmic movement through the land ensured their survival and provided a stable existence in a land that many would consider unforgiving and harsh. Two hundred years after the first contract with European explorers and the introduction of European goods, and the Northern aboriginals' way of life had significantly changed. No longer were they reliant on nature, nor were they self-sustaining; life in settlements had created a number of social challenges that are now just beginning to be overcome. In this process of social healing many groups have begun to look back on their past and celebrate their traditional way of life.

The Barren Ground Caribou was the core of sustenance, providing 90% of the food and raw cultural materials; woodland caribou and moose were an important secondary resource. The only native sustenance in the Sub arctic that is able to sustain a human population is flesh food, and for this reason the hunt leader was crucial to the group's survival, and was the leader of the kinship group, known as wokedz'ede "the one who we follow."

The hunt itself, although essential in living off the land, is not seen as hardship; rather, hunting is held in high regard and is thought of as a key cultural component. Many Northern aboriginals continue to leave their communities and spend a portion of their time harvesting food from the land, some leaving for days while others continue to spend several months living off the land:

> "For many aboriginal residents, harvesting of caribou is a way of life that links directly to Aboriginal livelihoods, culture and well-being. In small communities and for low-income families harvesting caribou and other wild foods is essential for meeting basic nutritional needs where store bought foodstuffs are prohibitively expensive…"[229]

229 Government of the Northwest Territories. 2006 – 2010. Pg 34.

FIG.5.1. “The Dream,” by author
Depicts this spiritually charged phenomenon; the dream does not just allow the hunter to become charged with the energies of the spirit and become one with the animal spirits, these spirits will guide the hunter and ensure his success and the future of his family. The aurora borealis, through which the figure is suspended, is known as the dance of the spirits. Its energies are thought to bring enlightenment to those who are open and receptive, while offering protection and guidance.

Although utilitarian and necessary for sustenance in the primal sense, the act of hunting was a powerful and spiritual part of life that was guided and inspired by the spiritual world, manifesting in dreams and meditation. Those who were open to spirits were thought to gain a greater understanding of themselves and the world around them. Many practices were developed to further their ability to reach into the spiritual world, methods of healing such as a sweat lodges which help remove toxins from the body and allow the participants to dream better, the pipe ceremony, and meditation are a few methods used to further self-discovery and enlightenment.

Ojibwa shaman and painter Norval Morrisseau is one of the few Northern aboriginals who speaks candidly about his experiences on his journey to self-discovery; in part, this is because there is a cultural taboo associated with speaking to people outside of the culture about such experiences. Morrisseau acknowledges that speaking openly about his spiritual experiences is important for others to understand his work and more importantly, his culture. Morrisseau describes seven levels of the unconscious and each level that is entered into by the individual provides a greater self-understanding. He goes on to explain that his inspiration comes from “the house of invention,” entered into through dreams; within this house, all things ever invented by man exist and while flying on “astral planes,” the various levels of the unconscious, he is looking down on his painting that have yet to be created: “So all this I did was just like a mirror reflection. The real work is in the astral plane, and this is just a shadow. This is where my images are coming from.”[230] Within this context it is easy to understand that to Morrisseau, his artwork is more than just a simple form of self-expression that is often associated with art. He explains, “I am a shaman artist. My paintings are also icons, that is to say, they are images which help focus on the spiritual powers generated by traditional beliefs and wisdom.”[231] To Morrisseau, a person viewing his work who is in tune to his or her physical and

230 Morrisseau, 2005. Pg 70
231 Morrisseau, 2005. Pg 54

metaphysical being can find more than beauty and inspiration in his work because his work is believed to have originated from a place greater then the artist himself; his work is said to have the ability to heal illness. In an attempt to render a visual representation of the hunt and what it means to live off the land in a traditional manner, I have created a series of painting. Though meditation and isolation in nature, following Morrisseau's example, the paintings explore what it means to live off the land in a nomadic manner and the traditional attitudes associated with life and death.

The night prior to the hunters leaving their families and venturing onto the land, the families meditate together asking the animal spirit for guidance. They explain their intentions and good will toward the animal whose life they will be taking, "Feed my people great beast and I will do you honor. Come to my spear, that I may kill you and bless you, that you in turn, may you live and thrive and grow fat again."[232] If the spirit accepts these intentions as pure and without ill will and if the hunter is open to receive guidance, the spirit will manifest itself to the hunter in the form of a visionary dream. The act of asking the spirit for permission to end the life of its physical being is a humbling experience, the spirit of an animal is seen, as a powerful element that has the ability to grant the hunter and his family survival. The guidance provided to the hunter by the spirit will allow him to get close enough to his prey to kill it without first scaring it away. The first painting in this series, "The Dream" depicts this spiritually charged phenomenon. The dream does not just allow the hunter to think like their prey, but also to become charged with the energies of the spirit and become one with the animal spirits (see FIG.5.1). When they awaken and leave their families, the hunters will spiritually become one with their prey.

Once the hunter leaves his family, he enters into an interesting relationship with the animal he seeks. The hunter and the hunted, although they may seem like opposite sides of the spectrum, are not. Living and dying can only exist together, one cannot live without dying and one cannot die without first living — both are seen as equally important and both are considered sacred. Death and birth are not seen as an end or beginning; rather they are seen as part of a cycle from which energy is transferred to another form, one can live because another has died, simplified, life feeds on death. Laurens Van der Post, a journalist, had the opportunity to travel with African bush people who continue to live off the land as their ancestors had. He describes the hunt and pursuit of the herd that last the entire day, and the moment of the kill: "I have never seen killing which seems so innocent. It was kill in order to live. On their faces there was always an expression of profound relief and gratitude."[233] The act of taking a life is an act of immense intimacy between the hunter and hunted, and requires a respect and spiritual engagement. The hunter sees his prey and must not act superior to it; he must think and speak respectfully to the animal and approach it with the right mind set.

> "[Hunting is] something deliberate and powerful and profound, that you come to this place asking an animal for its life and in a sense asking it to grant you your [life], or to become part of you. That's the most important gift you could ask of anything to be apart of your life." [234]

Asking for permission, and accounting for ones' actions to the spirit of the animal was critical. Caribou the source of all life in that they provided over 90% of the food and material needed to sustain life in the North, and thus, it is easy to understand the intimate relationship formed with them. It was important to respect all living things equally; the hunters had an obligation to the animals that they killed to use all that could possibly be used — every part of the animal was treated with respect and the parts that could not be used were left behind to feed other animals. While moving or working on the body, it had to be done so consciously that daily gestures of thanks towards the source that kept them alive where given to the spirits in honour

232 Johnson, 1991. Pg 81

233 Van der Post, 1986. Pg 18.

234 Nelson, 1991. Pg 36

FIG.5.2. “The Keeper of the Spirits,” by author
Demonstrates the interconnection of all the spirits, through which the life energy flows creating one entity known as the great spirit. Surrounding the circles are life’s teachings: honesty, bravery, love, trust, wisdom, humility, and most importantly, respect.

of the life that was given to them. The relationship between hunter and hunted was a reciprocal one:

> “What [the hunt] also reveals is a the paradox of primal relations, hunter and hunted, in which the hunted can suddenly reveal transcendence, to the extent of becoming divine, and the hunter becomes the hunted, the one sought by the great spirit, the true hunter. One walks with great care in the course of such a hunt.”[235]

Failure to demonstrate the proper respect for all living things could have dire consequences: the great spirit would not come to the hunter the next time he asked for guidance, which would result in starvation. The second painting in this series, “The Keeper of the Spirits,” demonstrates the interconnection of all the spirits, all living beings are equal and through which the life energy flows creating one entity known as the great spirit. Each being is equal and has its place, their energies flow in a circle that allows life. Surrounding the circles are life’s teachings: honesty, bravery, love, trust, wisdom, humility, and most importantly, respect. The teachings flow around the ring, as without an understanding of the teachings life cannot exist in the harsh Northern hemisphere (see FIG.5.2).

It is interesting that the death of the individual is seen as similar to the death of prey; it is not seen as tragic but necessary in the never-ending exchange of energy. To accept death and die consciously without remorse is to die well, as described by Barry Lopez:

> “I have lived a full life. I am willing to die because clearly I will be dying so that others in this small herd can go on living. I am ready to die because my leg is broken or my lungs are impacted and my time is finished.”[236]

The act of relinquishing one’s boundaries formally and willing transcending into the unknown is to die with dignity. Lorna Stuckless in an interview talks about her

235 Baynham, 1991. Pg 46
236 Lopez, 1991. Pg 57

FIG.5.3. "The Rebirth," by author
Explores the cylindrical flow of energy that was seen as being fundamental to existence. The mother and child demonstrate the transfer of energies while surrounded by the life forces that will allow them to continue to exist and grow.

grandmother's views on dying,

> "[She used to say] don't think about dying. All you do is pass onto another life. Don't worry about it. You get ready for your birthday – that's a great time. You get ready for death – that's a great time too."[237]

The death of the individual was seen without taboo, it was embraced as a part of life. The third painting in this series, "The Rebirth" (see FIG.5.3), explores the cylindrical flow of energy that was seen as being fundamental to existence. The mother and child demonstrate the transfer of energies while surrounded by the life forces that will allow them to continue to exist and grow. The natural world that surrounds them provides nourishment both physically and spiritually; it teaches how to be good and true to oneself, as Johnson describes:

> "Animals are great shamans and teachers… They fill the world of the hunter inside and out. And any beast may pass, whether flying as a bird, trotting as a quadruped, or wiggling in the way of a snake, maybe a messenger signaling some wonder – perhaps the transformation of a shaman, or one's own personal guardian come to bestow its warning or protection."[238]

It was felt that if those who live from the land were open and receptive, and the land would continue to provide for them.

Understandably, special attention was given to the mysteries of life that provided sustenance, birth, and death; for that reason, women were believed to the keeper of the hunt, and although they were not directly involved in the killing of prey, they were metaphorically of equal importance to those who did hunt, as Morrisseau writes, "My people believe that the earth to be their mother and that we are children of the earth. We are all one in spirit."[239] Women were seen as the manifestation of life nourishment and fertility. "The Keeper of the Hunt" (see FIG.5.4) explores the

237 Momatiuk, 1998. Pg 35
238 Johnson, 1991. Pg 82
239 Morrisseau, 2005. Pg 26

FIG.5.4. The Keeper of The Hunt, by author
Understandably, special attention was given to the mysteries of life that provided sustenance, birth and death; for that reason, women were believed to the keeper of the hunt; women were seen as the manifestation of life nourishment and fertility.

role of women in the hunt, mother with child surrounded by the fruits provided by Mother Nature. The lifeline, a reoccurring symbol in traditional aboriginal art, demonstrates the transfer of energies from the mother to her unborn child.

While the woman is seen as keeper of the hunt, those who hunted were seen as being well-centred in the world, understanding their place within it. As Morrisseau declares, "We have to treat everything with respect. The earth, the animals, the plants, the sky, everything."[240] It could be argued that this approach was taken without choice, and understanding and respect of the harsh and unforgiving Northern environment was necessary for survival, but others who still harvest from the land very adamantly link their spirit and culture to the food which they eat, and some go as far as to say that the destruction of their peoples' spirits was and still is directly linked to being forced to eat factory farmed meat.[241] It goes without saying that the natural environment remains an important part of Northern aboriginal culture. It was during seasonal changes that history was shared; unravelled in the landscape, natural landmarks were reference points from which the culture was shared. Marked by the elders through story telling, and the performance of rituals, the result was collective memory associated with the land. As John B. Joe, the chief who signed Treaty 11, describes, traditional places acted as memory hooks from which the cultural fabric is hung, without which the oral history and passing of the knowledge of the land could not happen.[242] It was during seasonal movements that knowledge of the land was passed on through the generations. "The Hunter" (see FIG.5.5) shows the hunter centered and surrounded by the natural world that provides the sustenances from which life is sustained. On either side of him are the story trees from which the histories of the past and present are told and retold and that will grow with each passing generation.

240 Morrisseau, 2005. Pg 59
241 Lopez, 1991. Pg 58
242 Helm, 1994. Pg 24

FIG.5.5. The Hunter, by author
The hunter, centred and surrounded by the natural world that provided the sustenance from which life is sustained. On either side of him are the story trees from which the histories of the past and present are told and retold and that will continue to grow with each passing generation.

Reoccupying the land in a nomadic manner would allow those who participate to pursue a more traditional lifestyle where mobility will once again be the key to the group's success. As was done in the past, semi-permanent base camps will be reoccupied throughout the year. The impermanent nature of these sites will allow for site improvements to be made as users see fit and will also allow nature time to cleanse and renew. Further, by creating semi-permanent sites, as occupants revisit them they will have the opportunity to use these landmarks as reference points, from which the passing of oral histories and life lessons can be passed onto future generations. And not unlike the pre-contact era, families will have the chance to live according to kinship, be mobile and have the ability to coalesce and fragment as a group according to desire, season, and resources.

Traditional Building Practices

Traditional architecture is a perfect mirror from which an outsider can glimpse into another culture. As described by Peter Nabokov, a scholar specializing in aboriginal architecture, "Their traditions were their blue prints; social rules their building code."[243] This sentiment was echoed by one Kickapoo who told Nabokov during an interview, "By our houses you will know us."[244] Vernacular Sub arctic architecture is no exception. The architecture appears relatively simple made of few materials and is stripped down in appearance. But in truth, the versatility and flexibility of the tepee and wigwam structure was perfectly adjusted to suit the occupants' needs — economic, ecological, social, and spiritual — all of which were accommodated in one simple structure. Having undergone generations of alterations, the structure is perfectly adjusted to the cultural and physical need of the occupants, as described by Bernard Rudofsky:

> "Vernacular architecture does not go through fashion cycles. It is nearly immutable, indeed, unimprovable, since it serves it's purpose to perfection. As a rule, the origin of indigenous building forms and construction methods is lost in the distant past."[245]

Social organization and local resources all influence the size and shape of traditional houses, while methods of food gathering and availability of game restricted the size of gatherings.

The Sub arctic is the largest cultural area in North America. Within this vast area, there are a number of cultural groups, each with its own type of architecture that defines its culture and the resources of the area which the particular group occupies. It is beneficial to examine the spectrum of Sub arctic housing types as lessons can be learned from each style, and, because they exist within a similar climate, these lessons can than be applied in the design process. Traditional regional

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243 Nabokov, 1989. Pg 15

244 Nabokov, 1989. Pg 11

245 Rudofsky, 1987. Pg. 38

FIG.6.1. Caribou tepee, Fort Rae, 1913, demonstrates a traditional building typology for the region. Although contact has occurred at this point, traditional architecture remained unchanged. Simple in appearance, this structure had been modified through countless generations to suit the users needs to perfection.

FIG.6.2. Canvas tent, Fort Rae, 1939, with contact and the introduction of new materials and new forms, traditional building typology has begun to undergo changes.

architecture was modest in construction and materials, reflecting the harsh climate in which it was built, and shows the ability the individuals to improvise and adapt (see FIG.6.1). Building types included: tepee, bark-covered conical wigwam, tents, double lean-to, domes, and those of the Far West who had contact with the West Coast, created split plank cabins. Each of these building types was adapted to suit the individual groups physical, social, and cultural needs.

Unlike the modern Euro-Canadian lifestyle that is highly compartmentalized, with each component of life with its own place for instance work, family, learning, recreation, and religion all taking place in different locations, traditional living integrated all the different components of life into a holistic approach. Rupert Ross describes this integrated approach to living:

> "… we have to remember that the various rewards or satisfactions one experiences in traditional times came on a regular basis during the course of every single day, from virtually every activity undertaken. Each family off on its own in the bush occupied at one and the same time what we would call its workplace, its home, its recreation center, its school, its nursery, its library, it shopping center and most critically its place of worship. It didn't matter where one was at any particular instant; the surroundings comprised part of all of those functions."[246]

The holistic approach to living traditional architecture allows all aspects of life to occur without the interruption of barriers: as described by Nabokov,

> "[the] architectural imprint often ephemeral blends harmoniously with the land, and the ebb and flow between residents and surroundings is smooth. They are places where people can live together in tranquility."[247]

The home was a place of unity within the family and within nature, it was a place where the kinship group was able to share in the triumph of knowing that they had

246 Rupert, 2006. Pg.159-160

247 Nabokov, 1989. Pg 58

FIG.6.3. Elizabeth Chocolate of Rae, in a tent with Narcisse (in hammock) and Mary.

This image, undated, was added to the national archive in 1979, demonstrates a post-contact canvas dwelling. Although simple in appearance, and made of few materials, it remains true to North building typology. Versatile and flexible, it is perfectly adjusted to accommodate the occupants' cultural and physical needs.

FIG.6.4. Skilled Dogrib canoe men transport tent flooring, Fort Rae, 1939.

been able to stockpile enough meat and skin to last the winter, and at the same time they could rest assured that the land could support them as it had done for countless generations. Unfortunately, not unlike oral history, the knowledge of traditional housing is disappearing. The builder had an intimate knowledge of material, including the criteria for selection, construction methods, aesthetics, and proportion to achieve "the right look and feel" while accommodating cultural needs. Contact with Europeans and their goods changed the form, of traditional architecture: materials, building form, and meaning all underwent significant changes (see FIG.6.2 and FIG.6.3). The concept of home changed with trade, disease, depopulation, warfare, and relocation into settlements. Traditional architecture of the Sub arctic was so perfectly tailored to the environment it left no footprint and hence, there is little archeological evidence of what it was prior to contact. Fortunately, many aboriginal groups in the Sub arctic and elsewhere continue to use their traditional housing types, although many have undergone significant changes since contact.

The tepee is ideal for nomadic groups. It is quick to assemble and dismantle in all weather conditions and the materials used were simple: wood poles (young, straight, long pines would have been preferred), stakes, caribou hide, and sinew. With those four materials, all of which were readily available, a portable weather-proof home was created. There are two ways in which tepees were traditionally built; the first uses three poles while the second uses four poles. The method using four poles was most commonly used in the North as it created greater stability while at the same time allowed for a steeper slope on the side facing prevailing winds, preventing snow drifts from piling unevenly around the structure and possibly collapsing it. Another advantage to using four poles instead of three is that a larger interior space could be created; the plan is typically oval with a rounded, circular bottom (see FIG.6.5).

The caribou hide (see FIG.6.6) that was used on the tepee was cured and smoked to prevent cracking and keep the hide supple after being wetted; the women would have sewn the cover with split sinew, creating a waterproof seam. To construct

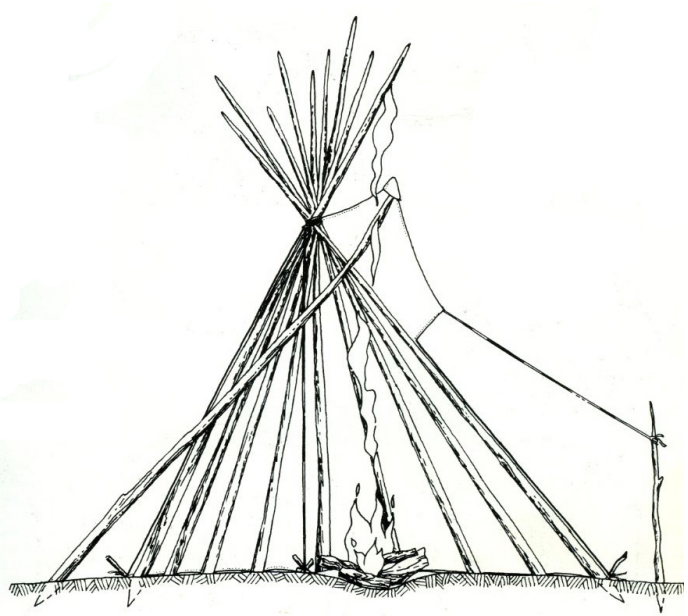

FIG.6.5. Tepee, section: four poles are tied together to form an apex, additional poles were added to increase overall strength

FIG.6.6. Caribou Hide Tepee Cover: was extremely versatile, and once cured would form a waterproof covering.

the structure, three of the four poles would be lifted to form an apex crossing one another. Once balanced, the fourth pole would be added to form the main structure of the building. With all four poles in place, they would be tied together at the apex. Additional poles could then be added as desired to increase stability and overall strength of the structure. Once the frame was in place, the cover would be added beginning at the western side, and at each of the four poles, the cover would be tied, pulled around, and staked into the ground to prevent it from lifting. Adjustments would be made to the cover to produce a smooth taunt surface. At this point the smoke flap would be extended using a length of pole to adjust the opening depending on the weather.

During the winter, a liner would be hung from the inside of the tepee and stuffed with grass. In addition to being insulated by the snow on the outside, fresh pine needles were brought in to cover the floor. In the summer months, the hem of the cover could be dropped and then propped up to catch the breeze and cool the interior space. The tepee was perfected over countless generations; providing the necessary aspects to meet the occupants' cultural and physical needs, enabling them to survive in what would seem to most a very hostile environment.

The conical wigwam was the most commonly used traditional aboriginal building type across North America; it was used in the eastern Sub arctic by a number of groups including Micmac and Naskapi. The dome shape was 3.5 to 4.5 m in diameter. The wigwam was widely used as it was extremely versatile and could be set up and taken down with relative ease. Chronicler Samuel Hopkins was the first to write about the wigwam:

> "A wigwam is an Indian House, a building of which they take small flexible poles and stick them into the ground, round such a space as they intend for the bigness of their house… those poles they bend from each side, and fasten them together, making an arch over head… after which they cover

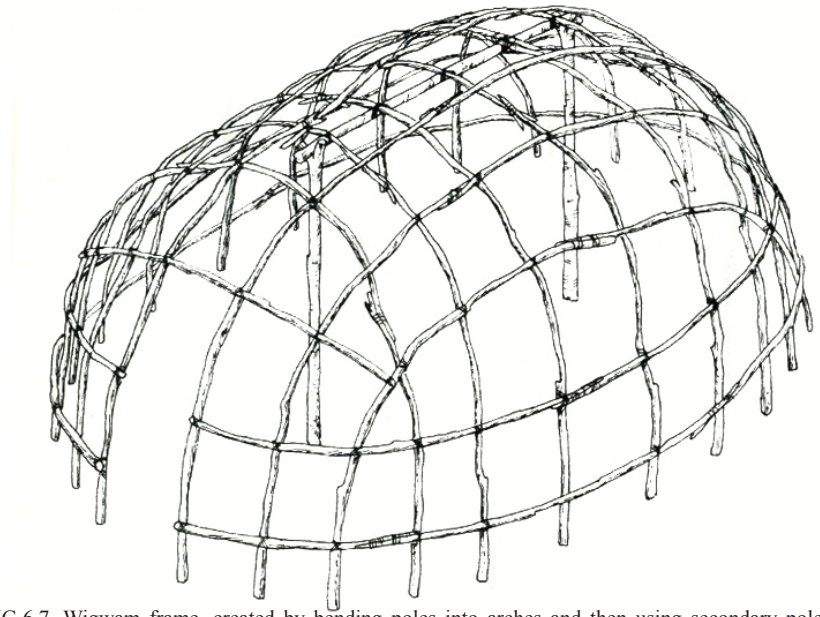

FIG.6.7. Wigwam frame, created by bending poles into arches and then using secondary poles and horizontial rings to stablize the structure.

FIG.6.8. Stripping birch bark, 1922. After being stripped, the bark would then be warmed to create a flexible material that would be sewn together and applied to the structure.

> the whole with bark of trees, leaving a hole in the top for smoke to go out."[248]

A wigwam was framed using straight spruce, cedar or fir – depending on the species availability. Four or more 4 m poles, with bark in tact, were placed in the ground upright in a ring shape. The poles were then bent to form an arch and complete the structure. Secondary poles and horizontal rings where used to stabilize the midsection (see FIG.6.7). The structure was then enclosed with bark; the bark was usually collected in the spring when the sap began running. Pine bark was preferred as the bark could easily be peeled off the living tree (see FIG.6.8). The harvested bark was then warmed over a fire until it became soft and flexible, and would be sewn together and wrapped around the structure. In extreme cold, grass was used to insulate the building. Layered on the inside, additional insulation was achieved by piling snow around the exterior. This type of wigwam would usually house two families, but it could be elongated using the same technique to house a larger extended family. The Iroquois and Huron of the Great Lakes region used this principle to build extensive houses known as long houses that were 30 m in length, and were occupied year-round by extended families. Sub arctic groups did not have the resources available to support large year-round groups as those from the Great Lakes region did; as a result dwellings, remained modes in scale. In 1873, historian Duncan Campbell wrote of his experience in a wigwam:

> "There is a place for everything and everything in its place. Every post, every bar, every fastening, every tier of bark, and every appendage, whether for ornament or use in this curious structure, has a name and every section of the limited space has its appropriate designation and use. Perhaps it would be impossible to plan a hut of equal dimension in which the comfort and convenience of inmates could be so effectively secured."[249]

248 Nabokov, 1989. Pg 56

249 Nabokov, 1989. Pg 63

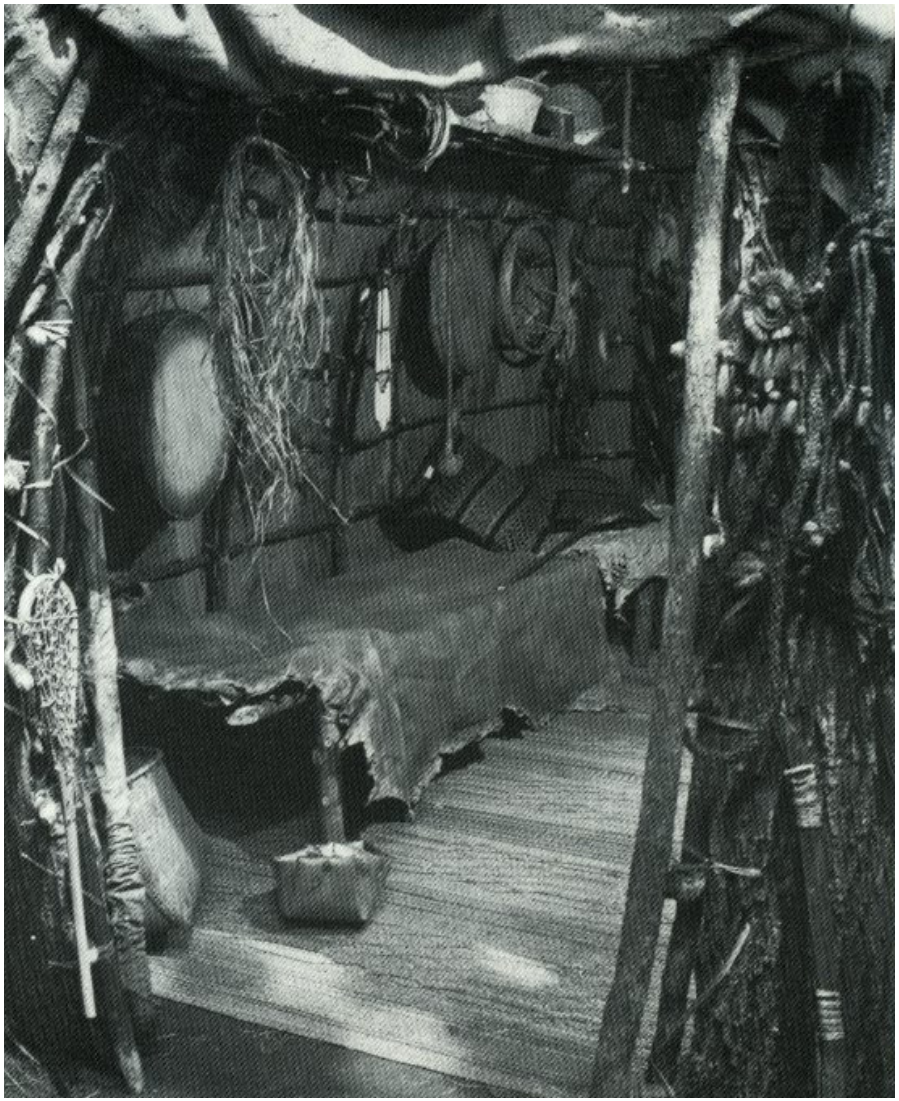

FIG.6.9. Interior of Chippewa wigwam. Everything has its place, creating a comfortable living space in a relatively small area.

Campbell describes the wigwam as efficient space. He also goes on to describe the space as being more comfortable than the colonial houses of the period, which is understandable considering the building type had been around for countless generations and was perfectly adjusted to the occupants' needs (see FIG.6.9).

One interesting twist to the wigwam was a dome-shaped structure created by the Kutchin. This group had contact with the Inuit and it is believed that the Inuit igloo influenced this building type. The Kutchin designed two bowl-shaped structures by bending young saplings. The saplings were then covered with caribou hide and placed together resembling two bowls leaning upright on each other. Two families would inhabit this structure, each in its own half, and when it came time to move, each family would lash their half of the structure onto a dog-drawn toboggan.

In relatively harsh conditions of the Sub arctic, buildings alone do not ensure comfort and survival from the elements. The structure acted as windbreak and grass and snow insulated and regulated interior temperatures. However, clothing was a necessary additional layer of insulation that was needed to maintain comfortable conditions. Multiple layers of clothing insulated and regulated the body temperature; for this reason traditional clothing has been included in traditional building practices - the two are integral to one another.

Clothing, like architecture, was perfected through countless generations, and tailored to suit individual needs. Typically, clothing was worn in multiple layers, creating an air cavity to trap warm air next to the skin. Harold Strub describes traditional clothing as a space suit:

> "Little used to the land, mid latitude city dwellers wear windbreakers and live in climate-controlled space modules. [Northern aboriginals] use to living continuously on the land, wear climate-controlled space suits and live in windbreaks… The space suit depends on body heat and relative humidity controlled by the individual."[250]

250 Strub, 1996. Pg 66

The space suit analogy holds very true. By wearing multiple layers and controlling the flow of air, and reducing heat loss. Typically, two layers of fur are worn, each layer with a thin air film that clings to the surfaces' regulating temperature. In two layers, there are five air films: one next to the skin and then one on each side of each layer.

The pants and coat are comprised of two loosely fitted wind-proof layers of fur. The fur of the first layer faces towards the skin, while the fur of the second layer faces out. The top and bottom of each garment is clenched — the pants by a drawstring and the coat by a tight - fitted hood. The fur matrix traps the still air and acts as insulation, while slow circulation caused by movement prevents humidity from condensing. Water vapors caused by perspiration move through the fur, along the long hairs of the outside where it eventually freezes. The ice on the outside of the coat acts as another layer of insulation that if left will slowly freeze dry or can be beaten off. The ruffle of fur around the edge of the hood reduces wind chill on the face, when the hood is thrown back the warm air is released and the body is cooled, allowing the user full control of his or her environment.

Footwear uses the same layering principle, typically having five layers of caribou skin. The first layer was a stocking with fur facing in, a short outer boot was then placed over the fur facing out, and a long outer boot, fur out. In between the last two outer boots was the sole, consisting of a layer of replaceable dried grass, moss, or feathers. These materials would gather excess moisture and absorb shock, as well as further insulate the bottom of the foot. Mittens were sometimes worn, but not always. When they were used, they were usually one layer, fur facing out and were sometimes lined. Snow goggles were worn in the spring to prevent snow blindness; they were made of driftwood or other available material and had a simple horizontal slits that prevented light from bouncing off the snow and into the eye, limiting light intake without blocking peripheral vision. The way in which clothing and the buildings were made and cared for was of great importance. Furs from the animals' head was used for the hood, the back for the coat, the hind quarters for the pants, legs for the boots and mittens. Good - quality, well cared for furs showed a respect for the animals that had given their lives and ensured future success.

The design I propose will build upon many key aspects of traditional architecture, will have the ability to adjust to suit the users' needs, unlike southern housing typology, which is highly compartmentalized. A holistic approach is more appropriate for a nomadic lifestyle, one which allows for flow within, where activities can be shared among household members. Building upon the space-suit principle, multiple layers will aid in insulation by using multiple air cavities. Last, simplicity will be key, simplicity of components, materials, and assembly will all aid in creating a user-friendly structure that can easily be assembled in all weather conditions.

Contact

Archaeological evidence suggests that within the first few generations of contact, European implements had reached from the Atlantic coast to the Athapaskan groups of Northern Canada. The benefits of European implements were inarguable; iron reduced the uncertainty of life in the Sub arctic and aided in ensuring survival, creating an instant market for European goods. Given the remoteness of the interior north, contact was limited at first. The first recorded contact with Dogrib in their territory, was on October 23, 1771, when Samuel Hearne along with a Chipewyan guide travelled along the tree line from Fort Prince of Wales to Coppermine River where they encountered "Copper Indians" and a few "Dogrib Indians". The meeting was believed to have taken place between Point Lake and Mackay Lake.[251] Despite this encounter and few others, the traditional way of life and social structure remained in-tact, and the only change that occurred was the occupation of trapping. Animals such as, fox and beaver that were never a part of the traditional diet; the effort required to trap these animals and other fur-bearing species is fairly substantial and they yield little meat of low quality when compared to traditionally hunted animals such as caribou.

The first changes were felt when the French captured Fort Prince in 1782. Shortly after the capture, the French began using the Chipewyan and Cree to act as intermediaries between the points of trade and the Athapaskan groups in the Northern interior. The influx of other aboriginal groups into the North created a situation that would not have traditionally taken place. As a result of an unnatural situation created by trade, this period is known for the intensive fighting that took place between the Dogrib, the Chipewyan, and the Cree. The Dogrib established "permanent" settlements and retracted into a smaller area as a defensive posture. The fighting finally came to an end in 1823, after a small-pox epidemic killed 90% of the Chipewyan, and peace ensued between the three groups.

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251 Sturtwart, 1981. Pg 293

FIG.7.1. Skin lodges of the Dogrib in front of H.B. Co., Fort Great Slave Lake. [Fort Resolution 1901] Image of early contact; for many, trapping had become an integral part of life and regular trips to the trading post had also become apart of this new lifestyle.

FIG.7.2. Pinsky's store, Fort Rae [Rae], built in 1923 - 1924. [Men and dogs in front of the store]. (1924). Trading posts such as this reshaped the social landscape of Canada's North.

Records also show that there was considerable fighting between the Dogrib and the Yellowknife. A representative from Hudson's Bay Company in Fort Franklin recorded the Dogrib's attempted to trade and were restricted and bullied by the Yellowknife. However, between 1822 and 1825 peace had been made: "[the] destruction of a considerable part – about one fifth [of the Yellowknife's population] by Dogrib broke the aggressiveness of Yellowknife and peace was mediated."[252] Once peace had been made, the Chipewyan, Yellowknife, and Dogrib began to reoccupy their traditional land much as they had done before the fighting had begun.

Up until 1852, the closest trading post to the northwestern interior was Fort Simpson, a distance that would take between 15 and 30 days to travel. The distance made trading difficult and while some did haul their furs and provisions that considerable distance, the majority remained isolated and continued to live off the land much in the same manner as their ancestors had. In 1852 a trading post was established in Fort Rae; this was the first trading post located in northwestern interior, located 29 Km away from the Dogrib's major summer and winter trail intersection. Fort Rae was accessible by boat to receive provisions from Yellowknife twice a year via Great Slave Lake — a pattern that would remain until 1950.

With the opening of Fort Rae, trapping became a way of life for those occupying the region. Small fur-bearing species that previously were considered tedious to catch became valuable. Their pelts could be exchanged for glass beads, metal, sugar, tea, flour, tobacco, guns, and ammunition (see FIG.7.2). Although trapping became an integral part of life, it could not sustain life in the Sub arctic and a hybrid system was developed that included both hunting and trapping. Traditional hunting remained as a safety net that ensured the bands' survival while trapping provided the goods that eliminated the uncertainty of the hunt. The downside to this new system was that trapping took time away from hunting. The meat that was yielded from trapping was little and of poorer quality, and less food was being

252 Sturtwart, 1981. Pg 294

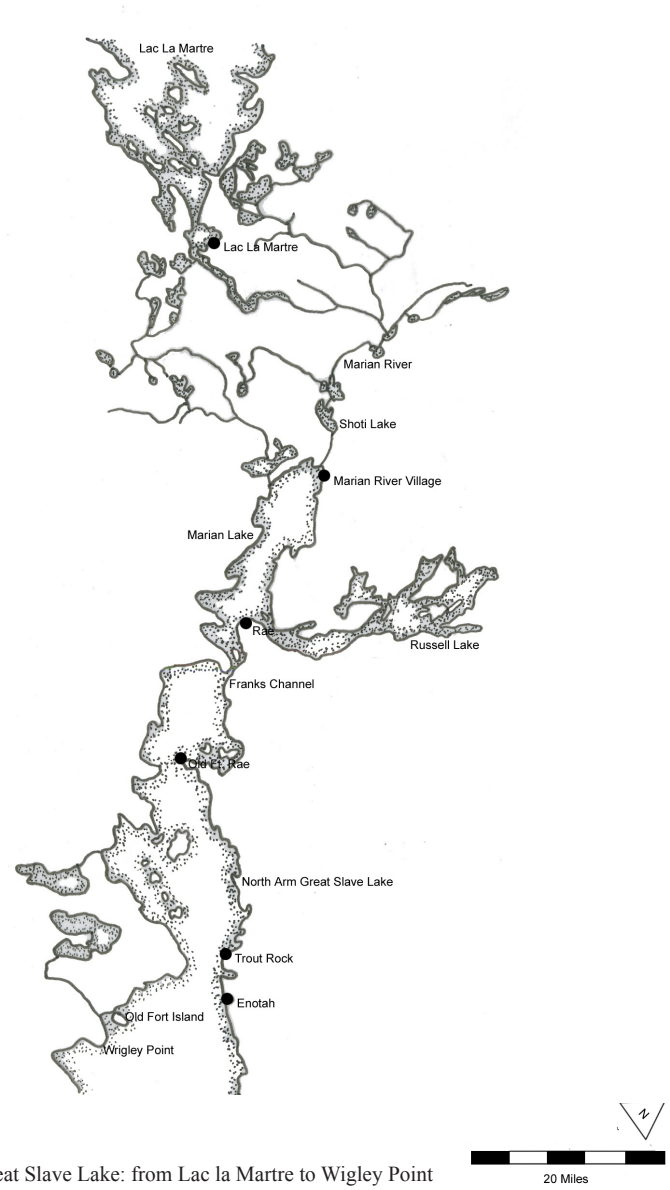

FIG.7.3. North arm of Great Slave Lake: from Lac la Martre to Wigley Point

taken from the land. As a result even more time had to be spent trapping to make up for food shortages, creating an unending struggle to acquire sufficient food, which caused a dependency on European goods.

Equally damaging to the natural cycles was that European goods were of poorer nutritional value and had to be replenished regularly — most monthly — so hunters had to change their traditional hunting range to maintain a close proximity to the trading post. The negative effects of the new lifestyle were not immediately felt. The first 10 years following the establishment of Fort Rae, the trading post was the highest grossing trapping post in Canada's North and for that short-lived time, the benefits of the new hybrid system that combined hunting and trapping outweighed the drawbacks. By the time negative effects of contact were realized, the damage to the traditional way of life and consequences of contact had become irreversible.

The population's dependency was further solidified with the opening of the Northern Traders Company in 1869 (see FIG.7.3). The new trading company broke the monopoly that had been held by the Hudson's Bay Company. Creation of competition resulted in even more wildlife being taking from the land, exhausting the natural resources. Fur-bearing species became increasing scarce, and additional time had to be dedicated to trapping with less time being devoted to hunting, resulting in even less food being taken from the land and a greater need for more European goods to supplement the shortages. As dependence increased, trading posts became centres for gathering. The population that had once been dispersed over a vast area converged on waterways leading to these centres. The increase in population dependent on the same natural resources made finding sustenance and fur-bearing species even more difficult. Sadly, the self-reliance began to dissolve and the aboriginal population of northwestern Canada continued to become increasing dependent on the trading post for their survival.

As in most Northern settlements, following the establishment of a trading post, the church was quick to follow, establishing itself at Fort Rae in 1859. That

FIG.7.4. Jim Darwish, wearing a locally made caribou parka, inspects furs on the porch of his Fort Rae Northern Traders store. He was one of several Syrian-born traders active in the Mackenzie district in the 1920s and 1930s (1939).

year, 139 Dogrib children were baptized as Roman Catholic. For decades, Fort Rae would be the most profitable trading post in the Mackenzie district, and it became the meeting place for tribal gatherings at Christmas, Easter, and June after the closing of the spring beaver hunt. Except for occasions of gathering, the Dogrib population, for the most part, remained in the "bush." The aboriginal population that lived in Fort Rae was almost entirely Métis. There were some records of Dogrib settlements; in 1859, Father Grollier noted a concentration of people hunting at the entrance of Rae Lake, at about the same time the first cabins were built on Rae Lake. The monasteries classified these and several other locations as permanent settlements; however many archeologists agree that these sites were used seasonally. In 1869, the Dogrib chief built a house at what is today Rae, 29 Km northeast of Fort Rae. Since then, this site has been a place for gathering and has become a preferred site for development.

As the fur trade gained importance, there were significant changes to the social structure. With guns and accessible trading posts, the power of the wokedz'ede was no longer needed as there was a new focus on trade. The trading chief became the new group leader; his job was to act as a link between the traders and their people. Another significant change was a greater division of labour, which included the participation of women in trapping. During this period of increased trapping, many of the traditional crafts were lost, including a large portion of oral history, traditional beliefs, as well as knowledge of how to be sustainable and self-sufficient.

Between 1852 and the early 1950's, little had changed for the Dogrib. For the most part, they were largely monolingual, had no formal schooling, and had little or no medical services. Most families continued to live in the "bush" and were oriented to taking caribou, moose, hare, and fish for subsistence while trapping fur-bearing species continued to be their only source of income for purchasing Western goods. Trading posts remained the main type of settlement. The larger ones like Fort Rae had expanded to include a mission, police, and a small hospital staffed by grey nuns, and as they had done in the past, the Dogrib continued to frequent the

FIG.7.5. Dr. J. H. Riopel, district medical officer and Indian agent, and RCMP constable Carter behind stacks of one dollar bills to be paid out as treaty money. (Fort Rae, 1939.)

FIG.7.6. Treaty time at Rae: dealing out treaty stores and provisions. Gatherings based on calendar days opposed to natural cycles, such as seasonal change altered traditional movements and furthered the population's dependency on European goods

post from time-to-time to pick up supplies. Interestingly, life remained so constant that up until the mid 1950's the main currency continued to be beaver pelts; one pelt would be traded for two rifle balls and the rifle balls could than be exchanged for goods. In the 1950's, a rifle ball was worth approximately $2.50 worth of trade.[253]

Although the Dogrib's way of life changed little, the way in which the Northwest Territories was administered had changed in the early 1900's. The federal government segregated the Dogrib into two groups called "band rolls." The first band roll was Yellowknife B Band, comprised of the Dogrib who traded at Fort Resolution on the south side of Great Slave Lake and took treaty in 1900, under Treaty Eight. The second band roll was the Dog Rib Rae Band; this band was comprised of the Dogrib who traded at Fort Rae and took treaty in 1921, under Treaty Eleven. Taking treaty allowed Statistics Canada to document the population for the first time. In 1921, there were 1 202 Dogrib in the Dog Rib Rae Band and 504 in the Yellowknife B Band.[254]

With the signing of Treaties Eight and Eleven, came Treaty Day celebrations — a time when household heads came to gather at trading posts and receive annual treaty payments. The payments in 1921 were $45 per individual, and an additional $15 per councilor and $25 per chief. Each head of household was also issued ammunition and fishing twine[255] (see FIG.7.4). Treaty became a time of celebration and gathering, further altering the traditional movement of people on the land. The delicate cycle the Dogrib had been part for centuries was broken. Gatherings such as Treaty Day, Christmas, and Easter was based on the calendar day and did not take into account seasonal changes or movement of game (see FIG.7.5).

At the same time as treaties were being taken, there was an influx of non-aboriginal trappers in the western Sub arctic. These strangers to the North brought with them unfamiliar diseases that the aboriginal population of the region had been

253 Schmidt, 1972. Pg 17

254 Statistics Canada, August 20, 2008.

255 Schmidt, Richard. 1972. Pg 25

FIG.7.7. A Dene woman with children in the Hudson's Bay store, Old Town, Yellowknife, 1952. The image depicts the combination of traditional life with the new western way of life.

sheltered from and had not been able to build immunity against. With large treaty gatherings, diseases that would otherwise have been isolated to a small population were able to spread and infect the whole population. In 1937, an influenza epidemic had deadly effects on the population and trading in the region dropped to an all-time low. Similar epidemics have raged through aboriginal populations throughout the country; Mowat describes its effects on the Ihalmiut:

> " It had no name, this unseen nemesis, for it was a stranger…. It became know as the Great Pain. Those who survived its passage remembered its effects with dreadful clarity. Pommela remembered it, and he spoke of how men, women and children, driven mad by the flaming fever within their bodies flung off their clothes and plunged themselves into the last spring snowdrifts – and did not rise again. Of the countless families Pommela knew half vanished within the space of a spring and summer, and those families which remained were shattered…."[256]

The effects of influenza were devastating. Family structures were completely dismantled, no one knows with any certainty how many perished, and other illnesses quickly followed, laying siege to already weakened immune systems and weakened spirits. It wasn't until nearly 10 years after the influenza tore through the population the federal government took action. In 1948, the federal government conducted a tuberculosis study at Fort Resolution and found that the majority of the population was infected. Many were sent to Edmonton and other southern cities to be treated. The tuberculosis outbreak was a turning point for many; those who were infected were unable to return to work as hunters and trappers, and for many it marked the end of nomadic lifestyle.

Had illness not ended the nomadic lifestyle it is very possible that over-hunting would have. When Europeans first arrived it was estimated that the caribou population

256 Mowat, 1959. Pg 17-18

numbered 5 million.[257] In 1949, Ottawa finally began to take notice of the dwindling caribou population in the Northwest Territories: an aerial survey suggests there were only 650 000 remaining; by 1955 their number were estimated to be 280 000, and in 1960 fewer than 200 000 remained.[258] Today, the caribou population is at an all-time low; in 2006, the population was estimated to be at 189 000.[259] ,The reasons for the alarming rate of loss is two-fold. First, prior to contact the only thing limiting the number of caribou taken from the land was the limitation imposed by crude weapons. The thought that it was possible to kill too many animals never occurred to traditional hunters, nor did the foreigner who brought them rifles and ammunition attempt to introduce this idea. This was coupled with the influx of trappers who came to the North, many of whom were responsible for the excessive slaughter by encouraging over-hunting. It was not uncommon for a single foreign trapper to kill 400 caribou a year for bait and dog food; in addition, caribou meat was also being harvested for wholesale. Further devastation to the herd was done by prospectors in their quest for minerals; they intentionally burned millions of acres of winter range to expose the rocks. The rapid decline of the once-great herd was occurring in tandem with the influenza epidemic. The lifeblood of the North was being drained — if those who had been infected with tuberculosis had been able to return to their traditional nomadic way of life, it is very possible that the land would not have been able to support them.

The post-contact pre-settlement way of life has a lot of lessons that can be learned. The first is that trapping as a way of life is not sustainable, especially with the steady decline of value and demand for fur. Ecologically, the trapping practices that were introduced were also not sustainable. The land could not support the quantity of fur-bearing species being taken from the land; the most obvious example of this the decline of the caribou, which were slaughtered for trapping bait. As seen in this past failure, trapping alone cannot support a family, nor can a hybrid system that combines both trapping and hunting, and this is especially true with declining herds. If nomadic living was to reoccur, a new system would be need to be introduced that takes into account the declining wildlife population, and that would also allow the occupants to make a reasonable income.

257 Mowat, 1967. Pg 87

258 Mowat, 1967. Pg 89

259 Environment and Natural Resources, Northwest Territories. Aug 20, 2008.

Settlement

In 1952, Farley Mowat published his first book *People of the Deer*. In this work he chronicled the "virtual extinction of a native people…"[260] This publication brought to the public's attention the desperate situation the northern aboriginal population faced, with reports of disease and destitution, coupled by public pressure. The government had little choice but to finally acknowledge their lack of involvement and take action. In 1953, Prime Minister Louis St. Laurent publicly admitted the government's neglect of administrating Canada's North: "Apparently we have administered the vast territories of the North in almost continuing absence of mind."[261] It was at this time social services were extended to the North, 40 permanent administrative centres where established across the North, each providing education, health care, economic development, and social services. The benefits of extending social services into the North was necessary and long over due: expanded health services decreased infant mortality and increased the average life span resulting in a population growth, government housing program saw log dwellings replaced with lumber and plywood, and day school provided education for the majority of school-aged children for the first time. Unfortunately, the aboriginal population, whom these services were indented to help, was never consulted, and despite good intentions many of the services that were provided went against traditional values and caused substantial damage to the already ailing social fabric.

Extending services to the northern nomadic population, who moved over an extensive area, would have been challenging and as a result, settlements were implemented as the solution to delivering services with as much ease as possible. Although these services were being offered, they were not being offered unconditionally; accepting them meant the acceptance of change. At first, the aboriginals of the North were encouraged into settlements with the promise of employment, medical services, and education; failing this, they were threatened that

260 Mowat, 1959. Pg ii – x

261 Wikipedia. October 26th, 2007.

FIG.7.8. Kakisa 1985, a community that grew out of an "outpost" camp; was planned and built without outside influences.

FIG.7.9. Rae Lakes, February 1976: government-planned settlement based on southern principles; housing is assigned based on waiting list and not on kinship.

should they continue to live off the land they would lose their family allowances, and finally they were forced by the police to abandon their way of life. Settlement brought forth new concepts unlike anything that had been experienced before, including: stationary living, wage labour, fixed times for starting and finishing, meals and breaks. For some families, the conditions brought on by outside sources were too much for them, and they left settlement life to live in "outpost" camps located at traditional hunting and fishing sites; Kaskisa is one such outpost that has since grown into a community (see FIG.7.7). The government-planned settlements lacked any form of planning, the houses that were provided were inappropriate and did not meet the occupants' needs, and unemployment was rampant (see FIG.7.8). The result of this short-sightedness was devastating; a once proud, self-sustaining group became impoverished and dependent on others for their survival.

Traditionally, sites were chosen based on a holistic knowledge of the land. When officials in Ottawa took control, they chose not to consult those who knew the land best — the aboriginals of the North; rather, they made decisions on ill-conceived notions of the North and forced the people from their land by rapidly transforming trading posts into permanent settlements. The short-comings of using trading companies as permanent settlements was that when those sites had been chosen they were never intended to house a large number of full-time inhabitants. Poor site selection coupled with lack of planning resulted in communities that were unsafe and unhealthy for the occupants. New homes were built without regard of the natural site conditions: houses acted as snow fences (see FIG.7.9) by being poorly built and planned, and roads, water, and sewage systems interrupted the natural drainage system, resulting in pools of stagnant water after the winter thaw. The housing that was provided was based on southern suburban model houses, and were cold, drafty, and failed to meet the physical and social needs of the occupants (see FIG.7.10 & FIG.7.11). The new developments were imposed on existing social patterns that did not include coexistence within kinship groups and sharing of food and labour; residents had to change their lifestyle to accommodate the single-family

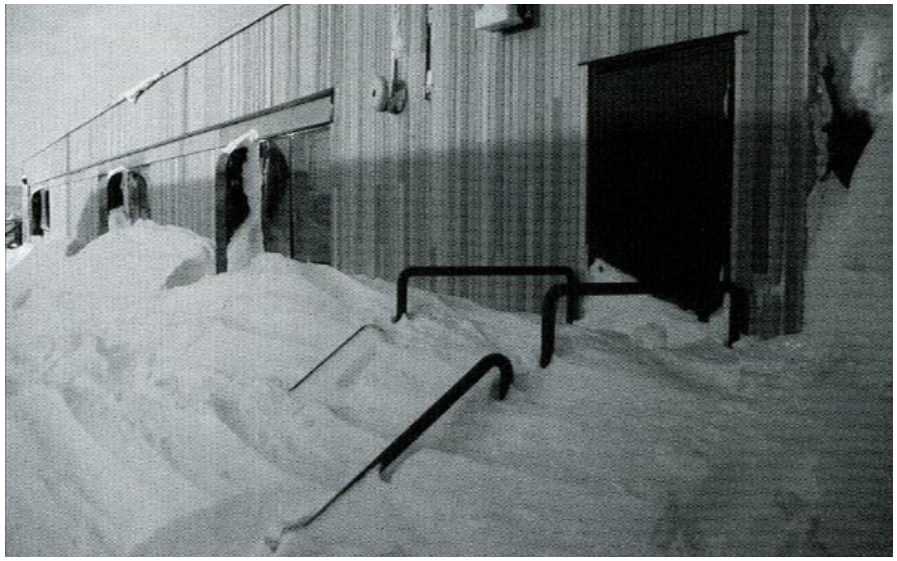

FIG.7.10. Inappropriate siting: snow-bound entrance Repulse Bay, March.

FIG.7.11. Southern principles applied in the North: residental front door.

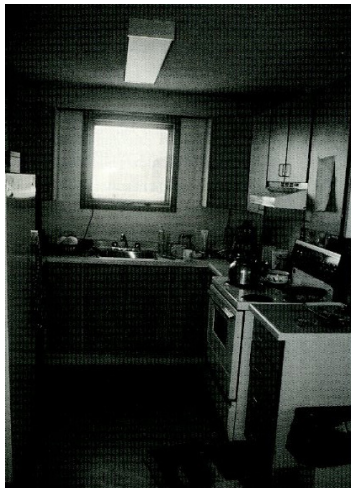

FIG.7.12. Kitchen that does not meet residents' needs.

home. Like most suburbs, houses were built on the smallest lots possible based on fire separation, and developed on a service grid with no concern for views, orientation, or connection to land. These people, whose ancestors had lived for centuries in tune with the land were at once severed from the land. To further a bad situation, the houses that were built were built in modest quantity and even today, the supply has not caught up to the demand. It's not uncommon for a family to wait 15 years before a home becomes available for them, and when homes are allocated, they are given to people who have been on the list the longest without concern for kinship, making it difficult for families to share chores and food.[262] The complete disregard of traditional knowledge has created unpleasant and often unhealthy places for living.

Another downside to settlement development is the concept of unemployment. Traditionally, adult band members living off the land were always employed by hunting; now there were few jobs and little training available in settlements as many hunters have lost their livelihood. Those wanting and able to work could not as there was no employment within the community. The Department of Indian Affairs and Northern Development found it cheaper to do things for the Northern aboriginals rather than with them. For instance, it was cheaper to provide family allowances and welfare than it was to address the failing economy base of the declining fur industry. In an attempt to rectify the problem in 1959, the Department of Indian Affairs and Northern Development began the Trapping Assistance Program, giving capital loans to individuals to buy trapping equipment. The problem was that the fur prices were at an all-time low and continued to fall, making it nearly impossible for those who took the loan to ever repay it, further increasing their dependency on government. Sadly, the semi-nomadic aboriginal populations went from being fit and active to suffering with countless problems that range from depression and obesity to heart disease. Unlike communities in the South, when unemployment and hardship comes, towns become ghost towns, such as where in

262 Diakun, 1997. Pg 27

FIG.7.13. Dene Kindergarten class Elizabeth Mackenzie School Rae. Empowerment of Aboriginal rights has allowed for traditional history to be taught in school class rooms.

FIG.7.14. Spirit of the drum Eddie Weyallon & Students, Rae Sunrise. 1992. Elders pass on traditional practices and knowledge to younger generations.

numerous mining communities that experience boom and bust. In the North, this does not happen; within Northern aboriginal culture, citizens become "layered" into an extended family beginning in childhood. Dr. Clare Brant, a Mohawk and practicing psychiatrist describes the family relationship and in doing so explains why people do not leave the hardship and poverty, preferring to endure rather than move away: "We want our children to take over our homes, feed us and support us… even wear our old clothes and ornaments. Thus we will achieve continuity and immortality."[263] The concept of family is so completely different from Western views where adults depart and live independently; northern aboriginal communities are closely tied to the land and their kin, where each individual is an integral part of a larger whole. Due to the connective nature of community and family, very few individuals will leave or venture very far from their place of origin (see FIG.7.11).

In the 1960's, significant and positive changes began to occur. The Mackenzie Highway was completed, connecting Rae to Yellowknife, with bus service two to three times per week, which made communication between the Dogrib of Rae and Yellowknife easier, and made it possible to meet with other aboriginal groups. Also, later in the same decade, youth who had been educated elsewhere in government- and church-run schools began to return. The visible cultural gap between parents and children was obvious, J. G. E. Smith wrote in 1978,

> "Parent life experiences stood in contrast to those of their immature and some of their young adult offspring, who since the nineteen fifties had gone through a few years of white man's schooling, had at least a basic command of English, and where involved with aspects of modern Euro-Canadian culture especially youth culture."[264]

The returning youth who had been educated in Euro-Canadian schools came back to their communities with a command of English, as well as an understanding of

263 Rupert, 2006. Pg. 22

264 Helm, 1994. Pg 12

Canadian politics and the legal system. They were able to provide leadership in the Pan Indian and Indian Rights Movement giving their people a voice for the first time. Up until 1967 all decisions made regarding the North were made in Ottawa by an appointed council. Gary Snyder describes the problem with decisions being made from afar:

> "Regional politics does not take place in Washington, Moscow, and other 'seats of power' regional power does not 'sit', it flows everywhere. Through watersheds and bloodstreams. Through nervous systems and food chains. The regions are everywhere and no where."[265]

The political shift from Ottawa to Yellowknife marks a significant new beginning for the people of the North. Once empowered, the aboriginal population was able to make significant changes in a relativity short period of time. At first, the new council based in Yellowknife was, for the most part, comprised of appointed members. In 1970, 14 council members where appointed and by 1975, the Northwest Territories had its first fully elected governing body.

The 1970's was a time of growing political consciousness. With a majority of the population being of aboriginal decent, the Indian Rights Movement had an increasing impact. The Indian Brotherhood, now known as the Dene Nation, and the Métis and Non-Status Indian Association formed and asserted an indigenous identity creating a unique culture identity and political autonomy at the territory level. These groups where well-informed and determined to make a difference. In 1972, the groups banded together and elected to parliament Wally Firth, a Métis from Fort McPerson. Firth was the first aboriginal to win a seat in a federal election, representing the New Democratic Party, and was re-elected in 1974. Firth's was a strong voice, keen on the protection of the North's natural resources for future generations:

> "We are rich in gold, base metals, petroleum, hydro power – all things the world seems to want. We are also rich in animals and fish and unsoiled land – things the world is making very valuable by destroying [it] as rapidly as it can […] It is my hope that this great potential can be turned into a life of dignity and security for the northern people – not for twenty years but forever. We are not headed in that direction now, we are on a path that will turn our potential into quick profit for multi-national corporations. I do not call that 'development'."[266]

Firth's victory and re-election demonstrated that when working together, the Northern aboriginal population has the power needed to make change, while showing the rest of Canada that they would not stand by and watch their culture and land being lost.

Northerners wanted ownership over decisions affecting local communities, local land, and resources and they were finally getting the attention they wanted and needed to be heard. At the federal level, in 1978, Prime Minster Pierre Trudeau amended Bill C-60 in an attempt to repair the damages done to the aboriginal people:

> "The renewal of the federation must fully respect the legitimate rights of the native people, recognize their rightful place in the Canadian mosaic as first inhabitants of the country, and give them the means of enjoying full equality of opportunity."[267]

On April 20, 1980, aboriginal leaders spoke in parliament about federal and provincial responsibilities in providing services. Topics covered in this forum included: aboriginal rights, treaty rights, native self-governments within Canada, and native political representation. That winter, the constitution was redefined, guaranteeing the protection and rights of the aboriginal population: "the aboriginal and treaty rights of the aboriginal people of Canada here by recognized and affirmed."[268] However, despite affirmation, tension still came to a head between developers and aboriginals

265 Synder, 1990. Pg 44

266 Mowat, 1967. Pg 3

267 Jull, 1981. Pg 5

268 Jull, 1981. Pg 6

in the 1980's over land claim disputes and the Mackenzie Valley Pipeline. This was more than a debate about land. As Justice Berger reports in his inquiry "Northern Frontier and Northern Homeland" in 1988, "[The] debate is not simply a debate about a gas pipeline and energy corridor, it [is] a debate about the future of the North and its people."[269] Berger's report brought to the general public's attention that the North was more than a natural resource and he drew attention to the environment and culture. Allowing the residents to express their views, Berger was able show the North as a place deeply rooted in local experience, ancestry, history, and as home to many. Berger is credited for establishing precedents in the consultation of locals and facilitating unity among Northerners:

> "This strong aboriginal political presence, along with the greater autonomy of the territorial government, has created a context of political change that facilitates an increase in the decision making capacity of Northern people."[270]

Berger's inquiry also led to pressuring the federal government into settling land claim disputes, however there still remains a huge backlog in some areas. The few that remain under negotiations are Den Cho and North Slave and South Slave regions. Those that have been resolved have reached agreements about rights to land, natural resources, trapping, and financial compensations. In short, they established "Principles of land ownership and use and for political – government relations between aboriginal people and Canadian state."[271] Today, Northern aboriginals have ownership of their land and resources, they have a say in decisions that affect them, and there has been a substantial shift in power to the local level, as one resident of Rae, John B. Zoe explains:

> "In the past, the people's advice wasn't being sought. Meetings were about telling people what to do. Now, it's a matter of letting people have a say. I mean, they are the only people in the world with an intimate knowledge of the land – their knowledge of the land is based on survival and knowing how to survive on the land, and it's a lot more knowledge than people from the outside have."[272]

Slowly, over time and great adversity, the approach to dealing with Northern issues has begun to change and as a result, the social healing has slowly begun to take place.

It is important to note that the easiest and cheapest solution is not always the best solution, and the lasting effects of what was easy and cheap can be serious, with lasting, long-term damage that takes a significant amount of time to undo. The introduction of a low-key meat industry that would allow the people to reoccupy the land in a meaningful manner will not produce a quick or large profit, especially when compared with other industries currently taking place in the North such as mining and drilling for oil. It will, however, be a long-term investment from which future generations will be able to benefit. Thinking long-term is key, as is working in harmony with the cultural values of the people involved. Burger has demonstrated that more can be learned through careful listening, and that positive change is never too late.

269 Berger, 1988. Pg 31

270 Christensen, 2007. Pg 118

271 White. Vol. 32. 89 –114. Pg 93

272 Christensen, 2007. Pg 120

Reoccupying The Land

"[The land] need not be abandoned. It should not be. Where once millions of caribou prospered, meat producing animals could again make it possible for native people to repopulate the northern prairies. It has been done in Siberia, Lapland, even in Alaska, and it could be done here. Reindeer herds and semi-domesticate, or wild musk ox and caribou carefully husbanded could bring new life to this empty land."[273]

The rate in which Canada's caribou population has declined is alarming, if not solely from an ecological perspective, from the effect it has on many Northern aboriginals. The decline and decimation of the herds has resulted in the loss of a way of life in a relatively short period of time. Living entirely off the land has become impossible, many traditional practices and oral histories have been lost. Also, those who may have wished to return to the land to live a more traditional way of life cannot. Farley Mowat painted a vivid picture of the destruction brought upon the caribou that were once the lifeblood of the North:

> "Almost everywhere the animal slaughter is both excessive and wasteful. Few inhabitants of the north, whether native or white, stay their hands while caribou are present and ammunition is available. There is undue reliance on a continuation of past abundance and an indifference to the welfare or rights of posterity… The average trapper of the barren grounds apparently aims at killing annually at least one hundred caribou. Only a small portion is required to feed himself and family. The rest is designated for use as fox bait and dog food… If the season turns out to be a particularly poor one for arctic foxes, the trapper may abandon his trap lines for that winter, and dozens or scores of caribou will have been sacrificed in vain."[274]

The senseless killing of the caribou that was seen in the past, is no different than the bloodletting seen in the way Canada has administered many of its Northern resources

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273 Mowat, 1979. Pg 91 - 92

274 Mowat, 1979. Pg 64-65

and affairs — with a complete disregard for future consequences. Unfortunately, as a result of a century of thoughtless waste, the barrens have literally become just that; an area that was once able to support millions of caribou and a vibrant culture now lies comparatively empty. Those who were once dependent on the land have had a very difficult time adjusting to the new Western way of life; they lost not only parts of their culture but also their livelihood and are having a difficult time adjusting to settlement life. Today, the barrens are completely uninhabited by people except for a few small isolated communities that are dependent on imported food and services for their survival.

The declining caribou herd and unemployment in Canada's North could provide a niche for reindeer herding, as well as the possibility of farming semi-domestic moose and musk ox. Although herding and animal husbandry are not traditional practices, it would offer an alternative lifestyle to those who choose to take advantage of it. This viable alternative is more in tune with traditional life on the land than the existing job opportunities in the North — primarily, working on the pipeline or in mines, neither of which is sustainable and both of which will, at best, create short-term income and leave the occupants of the North unemployed once the resources are depleted. Unlike the existing industries in Canada's North, reindeer husbandry offers a use for the taiga and tundra that is ecologically and economically sound; the reason its potential has been overlooked is that it requires a long-term investment and commitment by both the federal and territorial levels of government, and will not have a quick profits. However, unlike oil and minerals, reindeer herding will be able to create self-sustaining communities in Canada's North. By producing high-quality meat locally, and by developing a market for reindeer meat and by products, it would be possible to enhance local economies by creating jobs not just for those who herd the deer but also within the communities. If managed properly, a low-key meat industry could last indefinitely, protecting the declining caribou herd for future generations while offering the option of an alternative lifestyle that allows people to reoccupy the land, while at the same time eliminates the uncertainty of the hunt.

Reindeer have been introduced to North America on three separate occasions. Reindeer were first introduced to North America in 1891. A total of 1 208 reindeer where imported by the United States of America's federal government from Siberia to Alaska to produce food for an aboriginal group that was facing uncertainty and possible starvation due to the depletion of local wildlife.[275] The imported herd was immediately successful and grew quickly. By 1911, the herd had become 42 herds with 33 629 deer. That year the first export of reindeer was made and 125 carcasses were sent to Settle.[276] Reindeer meat became very desirable, creating an instant market. The popularity of reindeer meat continued to grow and so did the herd. The Lomen brothers were extremely instrumental in the growth of the herd, and by 1926, there where 110 herds with 350 000 head of reindeer. Between 1918 and 1925, 1 875 000 pounds of reindeer meat was exported to the United States. In 1930, the Lomen brothers created The Northwest Livestock Corporation. The primary goal of the corporation was to supply high-quality meat at low prices, and ultimately under-sell the cattle industry. Most of the reindeer belonged to local aboriginals and many more locals were employed by The Northwest Livestock Corporation. At the peak of production 2.5 million pounds of meat and 20,000 hides were exported, after which the company began to decline.[277] The reason for the decline of Alaska's reindeer industry was completely politically motivated; there was no social or ecological reason for the herds decline. The quality and cost of reindeer meat had created a sensation among avid buyers. The southern cattle and sheep ranchers could not compete with the low prices and began lobbying the federal government for protection. In 1926 the United States federal government succumbed to the pressure and placed an embargo on Alaskan reindeer meat. The

275 Payne, 1975. Pg 13.

276 Payne, 1975. Pg 13.

277 Payne, 1975. Pg 13.

loss of the southern market marked the end of reindeer herding in Alaska, the herd shrank, and those aboriginal families who had reshaped their lives focus on reindeer lost their livelihoods.

There were a few complications with reindeer herding in Alaska that should be noted, and that could be learned from. The first difficulty was that the larger the herd the more problems there were. With a larger herd it was more difficult to protect from predators. Also the larger herds had more encounters with herds of wild caribou who would, from time-to-time, "hi-jack" the domestic herds. In addition, during fly season, it became difficult to find adequate relief from flies, such as waterways and wind-swept ridges that could accommodate such large numbers of reindeer. There were also difficulties separating intermingling herds and keeping track of whose reindeer belonged to whom. Based on the experiences in Alaska and traditional herding practices in North Russia, it appears that a manageable herd would number between one thousand and three thousand deer, with six rotating herders. The herd would require two herders to remain with it at all times.

Another problem encountered with the U.S. reindeer industry, aside from the practicality of herding, was that the Lomen brothers had been accused of stealing reindeer from the aboriginals' herd and had allowed their herd to graze on ranges designated for the aboriginals' herds use. This resulted in some overgrazing, but more often it created mistrust and conflict between the parties involved.[278]

Reindeer have also been introduced on two other occasions in Canada's North: the first time in the 1920s on Baffin Island and the second time in 1934 in the Mackenzie Delta. The first attempt was a complete failure, Vilhjalmur Stefansson, a Canadian Arctic explorer and ethnologist, persuaded the Hudson's Bay Company to lease a large area of land on the southern portion of Baffin Island and stock it with reindeer. Without management, the reindeer went wild and the attempt was completely abandoned. The second attempt to introduce reindeer into Canada's North was a venture of mixed success. In 1929, the Canadian federal government purchased 3 000 reindeer from the Lomen brothers. The deer were then herded from Alaska to the Mackenzie Delta — a trip that took five years to complete. Once the herd had arrived, it should have done exceptionally well; the region's many lakes and eskers are ecologically prime for reindeer, and could potentially support 30 000 reindeer without interfering with the existing caribou population or having any negative effects on the local ecosystems. In theory, the herd should have grown quickly and new herds could have been established across Canada's North as was originally intended. However, the initial intent was never seen though; by the time the reindeer had arrived the federal government had changed and the new government had no interest in establishing reindeer in Canada's North, with the loss of interest the initiative was also lost.

The initial herd grew from the original 3 000 to 9 500 by 1942, a marginal increase compared to the growth seen in Alaska. The lack of growth was due to fact that the herd was being managed from Ottawa, by an administration that had no vested interest in the herd. There was no attempt to create local involvement or ownership of the herd as was the case in Alaska. Herders were brought into the North on contract and as a result of neglect and disinterest, the herd dwindled. Farley Mowat, in his book *Canada North Now*, suggests that Canada's federal government met with similar opposition from southern farmers to reindeer herding as the U.S. government did, and quietly put an end to any possible competition by simply not carrying out the original intentions of the project.

In 1964 the federal government placed the remaining herd under the care of Canadian Wildlife Service, which maintained the herd until 1974 and then sold the remaining 4 000, reindeer to Silas Kangegana, an aboriginal from Tuktuyaktuk. Under Kangegan's care and supervision the herd doubled in three years and in 1976, the first shipment of reindeer meat went on sale in Edmonton and Vancouver. Each shipment consisted of 21 000 pounds of meat. Ground meat and sirloins retailed for $ 0.89 and a $ 1.99 respectively; both shipments where sold out within days of

278 Payne, 1975. Pg 16.

arrival.[279] Kangegana's success has demonstrated that traditional knowledge of the land can successfully be applied to reindeer husbandry; in addition, the practice can be ecologically sustainable and profitable.

Perhaps the main reason why Canada has such limited interest in animal husbandry in its northern territories is that in North America there is no shortage of relatively affordable meat; it is far cheaper to import meat from developing countries such as Brazil than it is to invest in a low-key meat industry in Canada's North. At present, there is no pressure to further pursue food production. Remarkably, the average North American consumes 289 pounds of meat a year, compared with the average person from Bangladesh, who consumes less than 7.5 pounds of meat a year.[280] As developing countries continue to develop, greater demands will be on the world's food supply. More developing counties will begin to increase their demand and having locally produced, high-quality meat will become an asset for Canada.

Interestingly Russia differs from Canada in that they have a desire to be completely self-sufficient in food production and have gone to great lengths to exploit all regions of the country for food. Across Russia's vast territory, two thirds of the world's reindeer population can be found. In 2008, the Russian reindeer population numbered 1.2 million domestic reindeer and 1.5 million wild reindeer.[281] Russia is not alone in taking advantage of their northern land. Scandinavian counties also practice reindeer herding with 700 000 reindeer; Finland alone produces 4 708 000 pounds of reindeer meat per year.[282]

Unlike Canada, a number of Russia's northern aboriginal groups have traditionally practiced and continue to practice reindeer herding: "through traditional herding practices and modern scientific management, not only is [reindeer husbandry] socially and economically viable, but it is considered to be an extremely important element of the northern economy."[283] Russia has proven that by allowing their aboriginal population to continue to live off the land and by providing a market and means to sell their reindeer. Reindeer husbandry is a viable industry that has ensured the survival of various aboriginal cultures and traditional knowledge, as well the survival of the country's wild reindeer. The jobs created by reindeer in Russia's north vary greatly from professional jobs to unskilled labour: veterinarians, zoo technicians, administrators, accountants, mechanics, Land Rover drivers, herders, and positions at meat processing plants are a few of the numerous jobs that have been created by the reindeer industry. It's interesting to note although the majority of herders are aboriginals, not all herders are of aboriginal decent. The various jobs created by the reindeer industry have provided those who do not wish to live off the land the opportunity to find meaningful employment within northern communities. It has also allowed those who are unsure whether or not they want to leave to live in communities the chance to try it without forcing settlement life upon them.

Piotr is a Komi and an aboriginal herder who left the land for a few years, finding a job in Arkhangel'sk before returning back to the land. During an interview, he described the experience: "they didn't pay me enough, and I had no free time. I hated it. Not enough money to rent an apartment and have a girl friend, no time to do carving."[284] Vasily, Piotr's brother and family leader who also left the land for school and military service only to return once again to the land further elaborates: "we like it here, living in a chum, because these poles we have carved from the forest, and these walls we have sewn together from our reindeer. That is the meaning of home."[285] The National Geographic did an extensive spread on the Komi and it is fascinating to see the marriage of traditional and modern culture as well as hear

279 Mowat, 1979. Pg 93

280 Levine, 2006. Pg. 5

281 Ehrich, March 2008.

282 Payne, 1975. Pg 10.

283 Payne, 1975. Pg 9.

284 Ehrich, March 2008.

285 Ehrich, March 2008.

FIG.8.1. Komi reindeer herder Ploti Terentev gives his team a breather while crossing the tundra, 2006. The marriage of traditional modern culture is interesting to see. Terentev lives a traditional lifestyle, wears modern clothing, uses reindeer as a means of transportation, and eats off of china. It is curious to see the elements of each lifestyle they have chosen to keep and those that they have discarded.

them speak of the reasons why they chose to stay on the land. The Komi have chosen to live off the land, travelling year-round with their reindeer. Throughout the year, they pack up all their possessions onto 84 sleds pulled by reindeer. They wear some articles of modern clothing and some articles of traditional clothing and eat off of china. Their reindeer provide all their food, housing, and some of their clothing, and what the reindeer do not provide can be purchased with the profit made from the sale of reindeer meat.

Katya, an 38-year-old woman who is also a Komi herder who spends half the year on the land and the other half in a nearby village describes that in their chum, which is a traditional house similar to a tepee, two families have lived together for over 80 years only separated by a wooden stove, "at one time there were twenty of us living in this chum – and sixteen of them were children… we live better here than in [the] village, it has always been that way and will always be."[286] Life on the land is not easy; the winters are harsh the summers buggy. Each year is made up of frequent moves. The passage of time is not marked in hours and minutes but rather by seasons.

An American journalist, Gretel Ehrlich, writes about her experience living with the Komi:

> "To live nomadically in the Russian north doesn't mean one is homeless, but quite the opposite. Home is wider than four walls; home is the walls and roof and floor of each season: white, green, and brown. It is taiga and tundra, mountain and river, lichen, moss, and berry, reindeer, river and bogs."[287]

Life on the land is not for everyone but those who have chosen the nomadic lifestyle have found it to be very fulfilling and a meaningfully way to live (see FIG.8.1).

286 Ehrich, March 2008.

287 Ehrich, March 2008.

Canada's North has similar potential to Russia's: caribou and reindeer have the same biological need. In 1975, Russia's 2 million domestic reindeer produced 30 thousand tonnes of meat, leather, and hundreds of by products including glandular extracts that were used in pharmaceutical products, while employing 10 000 northerners.[288] Northern Canada's potential is comparable to Russia's. Doctor V. N. Andreyeu, a winner of the Lenin Prize for his reindeer research, concluded that Canada's North could support 2 million domestic reindeer without any adverse effect on the environment while allowing for the caribou population to grow. The Manitoba provincial government preformed a study called "A Feasibility Study of Northern Animal Husbandry." The study examined central and southern Keewatin and northern Manitoba and confirmed Dr. Andreyeu's findings that this relatively small area could support 22 to 40 herders with 4 000 to 6 000 head of reindeer without any damaging affects.

Based on Dr. Andreyeu's findings that Northern Canada can support 2 million reindeer without adverse affects, this thesis is going to explore the possibility of reoccupying Canada's North. Based on the success seen in both Russia and Alaska, the ideal approach is a small family-based business, where families move and work together to secure their own futures. Inspired by the Komi's marriage of traditional lifestyle and modern materials, the design will take advantage of both, creating a traditional living space that is move in tune to tradition than settlements, where the occupants will be able to exist within their natural surroundings.

As part of the feasibility study preformed by Manitoba's provincial government, the researchers went into a number of northern communities and consulted the members of each community on their feeling about reindeer herding. The method of herding that was presented had the herder being employed by the government; the herder would be expected to leave the community and his or her family for a two-week period to herd and then return to community for a two-week period before leaving again. The obvious short-coming seen by this proposed method was the family disruption that would occur when a member of the family is away for a two-week period. Other concerns included the feeling that this job would be just another form of government subsidy. The solution to these shortcomings is the model on which this thesis is based which is to make reindeer herding a family-based operation, with families who wish to participate owning their own herds. This approach is what is practiced in Russia and was the system used in Alaska; in both places it was successful. The initiative would indeed have to subsidized in the beginning; however, by giving the families their own herds, it would create ownership and the families income would be directly related to their production, just as farming is practiced in the southern Canada. The entire family would participate, eliminating family disruption. Schooling of children would require a more flexible schedule that is based around the seasonal movements of the reindeer; however, there is no reason why the children could not be schooled during summer and winter when the reindeer require less direct supervision. The introduction of reindeer husbandry is a real possibility with real potential, but requires those in power to think outside of the box. Settlement life is not the only way to live; with today's technology it is possible to live nomadically.

288 Mowat, 1979. Pg 93

Principles and Ethics: Introduction to Design

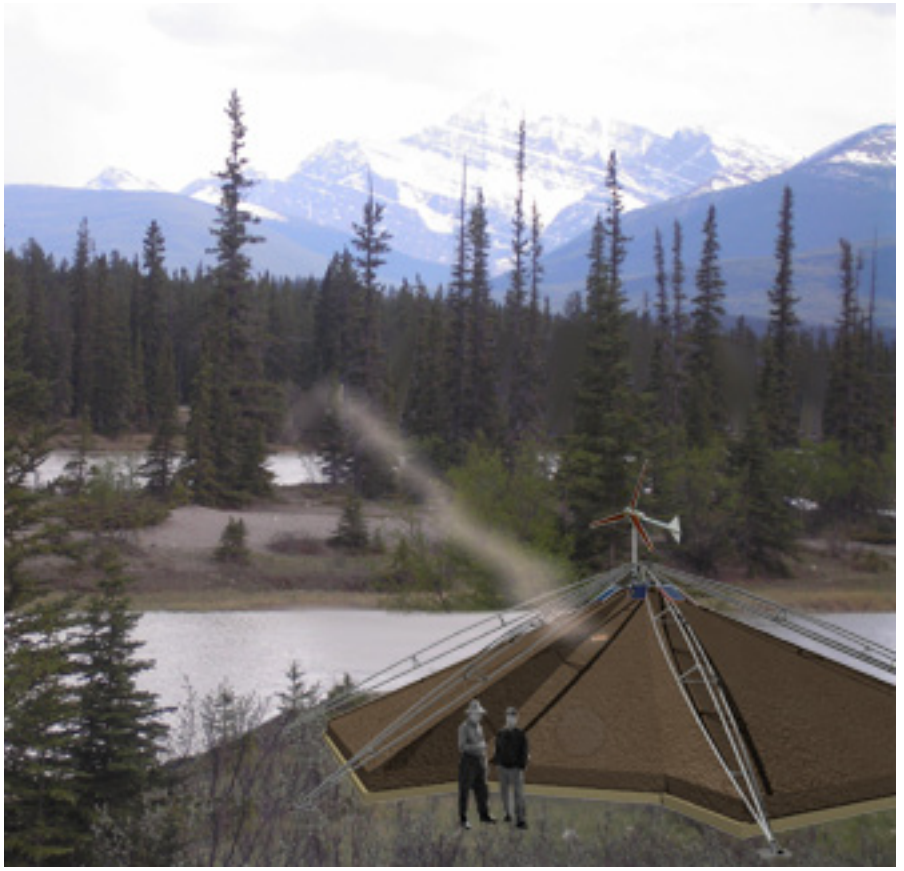


FIG.9.1. Design: Late fall campsite

The introduction of a low-key meat industry would, without a doubt, reshape the landscape; however, change does not have to be negative, and when carried out with a conscious consideration of the existing ecologies change can be positive. People are as much a part of nature as any other living species; it's how we choose to occupy our environment that set us a part. Western, a zoologist and warden at Nairobi National Park — Kenya's oldest national park — describes how the Maasai, nomadic herders, have reshaped the land for the betterment of all species within the local ecosystem:

> "The pastoralist, […] have become a surrogate migratory species. They behave much like wildebeest. Like wildebeest, Maasai herd their cows into short-grass savannas during wet seasons and bring them back to water holes when the rain stops. Over a year Amboseli's Maasi live in an average of eight settlements. Such human movements, […have] literally landscaped Kenya and Tanzania to the benefit of wildlife… They graze their cattle and leave behind woodland for elephants. In time, elephants create grassland again. You get a patchy mosaic of grass, wood, and shrub lands. That's the whole reason for the savanna's diversity. If you only had woodlands or grasslands, you would only support woodland or grassland species." [289]

The Maasai are an example of the ways in which humans can reshape the land in a positive manner; they are not hunters and gathers but farmers whose livestock live off the natural resources. Their presence has allowed human and non-human species to live side-by-side in a mutually beneficial relationship, where both have been able to flourish, and in doing so, the Maasai have aided in creating a richer and more diverse environment.

Tents are the ideal housing types for nomads, tents have withstood the test of time, as they are ideal for temporary and semi permanent application; nomadic groups have used tents for centuries. A tent is simply a portable shelter. It is typically made of a weatherproof material and is supported by a frame. Tents still have many useful applications in modern day society: tents are often used for recreation, military application, humanitarian operations, and to provide shelters for large events and celebrations. The size, quality and function of the modern day tent varies greatly, from temporary shelters that provide just enough room for one person to sleep to huge multiple room shelters.

The choice to design a tent for modern day nomadic herders was a choice based on the unique qualities the tent has to offer, primarily the ability to be portable. The shape and size of the design is based on traditional tepee, as the tepee form was perfectly attuned to the users needs, the disadvantage of the tepee was that it required a lot of work to build and maintain. Time would have been spent tending to the hides as they required fleshing, drying, curing, sewing, and mending, and the process was continuous. The tepee was heavy and would require a canoe to move it in the summer or a sled in the winter, and could not have been easily carried. The Komi use over 80 reindeer pulled sleds to move their chum, and possessions. Modern technology and materials could be used to create the same social spaces that traditional architecture provided while at the same time creating light-weight construction that is durable, adjust to suit the users need, and is easily transported over various terrains.

The shear number and variety of tents available is mind boggling, but despite the staggering quantity and numerous variations tents fall into four categories – these categories are defined by the frame that supports them: 'A' frame, dome, geodesic and cabin tents are the four types of tents available, each has advantages and disadvantages.

The 'A' frame tent is the most simplistic of the four types of tents, the frame has two poles on either side that form a triangle and a pole runs from the triangles apex that forms a ridge from which the tent's fabric is hung (see FIG.9.2). This type of tent is large enough to provide room for one sleeping person, it is lightweight and easily to assemble. The disadvantages of this tent is it's unreliable in windy

289 Weisman, 2008. Pg 80

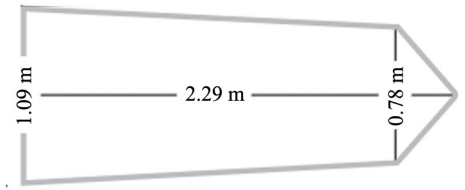


FIG.9.2. 'A' Frame: Big Agnes Seed House

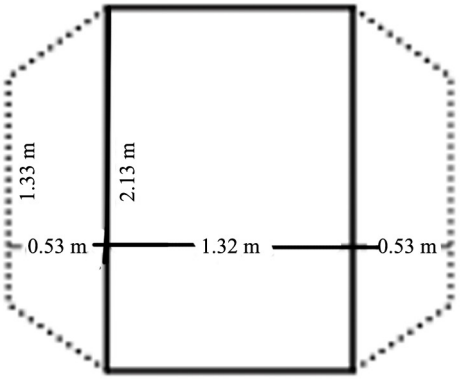


FIG.9.3. Dome: MEC Gemini Tent

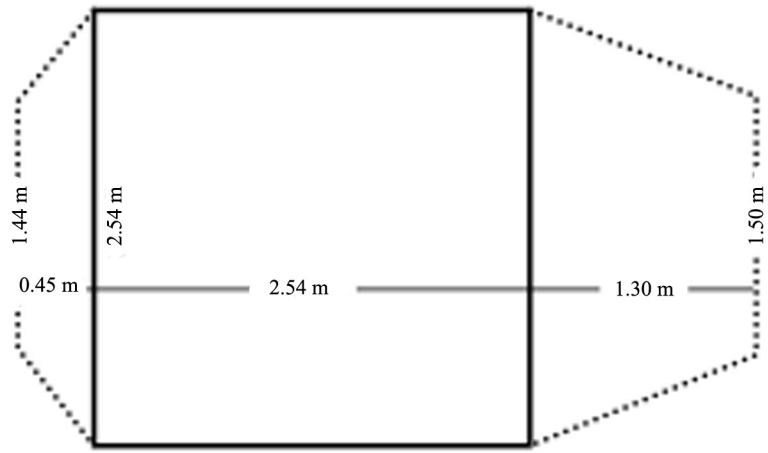


FIG.9.4: Dome: MEC Fun House 4

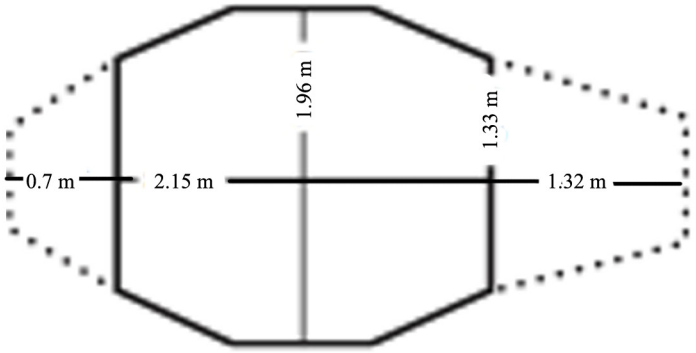


FIG.9.5. Geodesic: MEC North Wind

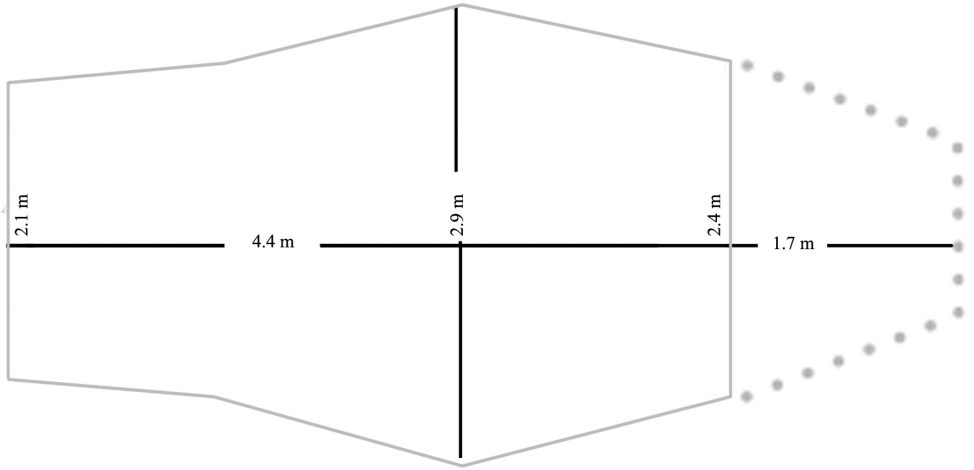


FIG.9.6. Geodesic: Big Agnes Flying Diamond 8 Tent

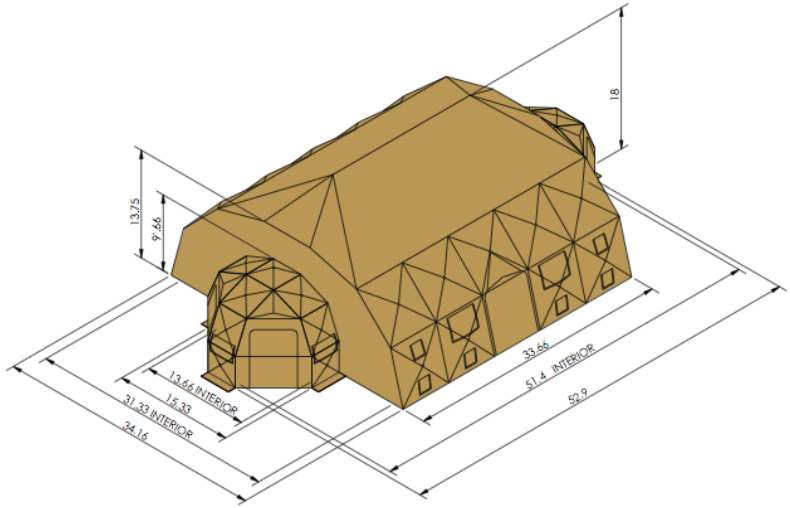


FIG.9.7. Geodesic: Deployable Rapid Assembly Shelter

conditions and it's inability to support the weight of snow, this type of tent is also difficult to keep dry and often requires the addition of a tarp which adds to the overall weight of the tent.

The second type of tent, the dome tent, is by far the most popular and widely available, and can be found at any retail store that sells recreational tents. This type of tent has a variety of configurations, in its simplest form the frame is constructed by joining or crossing poles over one another to form a large 'X' (see FIG.9.3 & FIG.9.4). The advantages of this tent and the reason for its popularity is that it is light weight, has good stability, naturally sheds snow, comes in a variety of configurations, is easy to set up, and has a fair amount of head room and interior space. This tent is perfect for recreational use, however it would not be ideal for nomadic living as the as a dome tent can sleep up to eight people – that is eight people sleeping side by side and does not account for any equipment. For short trips this would be fine, but on a full time basis this crowding would become tiresome. The head room is limited, most dome tents maximum height does not allow the occupants to stand up right, which is fine for short term camping but would not be enjoyable on a long term basis.

The third type of tent is the geodesic tent this design takes the dome tent and improves upon it by crossing the poles many times over, giving the tent great strength and stability (see FIG.9.5 & FIG.9.6). This tent's main advantage is its greater strength and ability to be used in extreme weather conditions. Its disadvantages are similar to the dome tent, the constricted interior space and ceiling height is well fine on a short term bases would not be suitable for full time occupancy.

The largest tents available are called Deployable Rapid Assembly Shelters, these tents are a geodesic structure, but on a much larger scale and are for military operations (see FIG.9.7). These tents can house an entire troop, can be used to create mobile hospitals and have a number of other military applications. These tents are not ideal for nomadic use, as heavy equipment is required to transport, generators to assemble and run them, and demands six highly trained people 45 minutes to assemble.

The fourth tent and the most suitable for long-term inhabitation is the cabin tent. This tent in its simplest form is rectangular in plan each of the four corners have poles that are attached to a rectangular frame, additional poles are added to create a sloped roof. This type of tent is comfortably large and can have multiple rooms, lots of heads space, this type of tent is commonly used in refugee camps, and used as tents which are often rented for wedding and other such celebrations. The disadvantage is that given its shape and height it does tolerate extreme weather conditions, heavy wind or snow would easily knock it over or collapse the structure. The cabin tents intended use is for summer conditions only. This type of tent is also heavy compared to the other tent types, they can weigh as much as 80 Kg, because of it's bulk, weight and inability to stand up to extreme climates it would not be a suitable tent for nomadic living.

Tent Type Comparison

	Type of Tent	People	Area (sq.m)	Weight (Kg)	Height (m)
Big Agnes Seed House	**'A' Frame**	**1**	1.9	1.1	0.96
MEC Gemini	**Dome**	**2**	**2.8**	**2.3**	**0.99**
MEC Fun House 4	Dome	4	6.5	8.65	1.85
MEC North Wind	**Geodesic**	**2-3**	**3.81**	**4.6**	**1.24**
Big Agnes Flying Diamond 8	**Geodesic**	**8**	**10.4**	**10.1**	**1.83**
Deployable Rapid Assembly Shelters	Geodesic		116	726	4.2
Proposed Design					
Winter	Hybrid	6-8	53.5	22.68	4
Summer	Hybrid	18-24	140	22.68	3.2

Considerations for designing a tent for nomadic living were: the lengthy durations the tent would be carried, the frequency of moves, durability, and sufficient room -given the length of time spent in the dwelling it had to be comfortable with the flexibility to change with the families needs. With the distances travelled by nomadic dwellers the design had to be lightweight, and when disassembled the tent had to be compact. Semi rigid poles where chosen as they are more durable then the flexible poles used in most recreational tents, and are lighter than the ridged poles that are used in the cabin tent, and unlike cabin tents the semi rigid poles can be made into four sections to allow for more manageable pieces. The design and material chosen had to be extremely lightweight, strong and durable. Given the frequency of moves made by nomadic dwellers, the assembly has to be as simplistic as possible, color coding the material would help the users to identify components that belong together, someone who is experienced in assembling the design should be able to erect the tent in 15 minutes, compared to the 5 minutes it takes for an experienced person to assemble an 'A' frame tent and the 45 minutes it takes to assemble the cabin tent.

The shape of the tepee was perfectly suited to the extreme weather conditions of the Sub arctic; it able to withstand the strong winds and heavy snow. For this reason the shape of the winter configurations very much resembles the traditional shape of the tepee. The shape of tepee also allows the tent to be free standing and does not require the use of guy wires. The tepee took advantage of a double skin, which the design also incorporated, the summer tent folds onto it's self, creating multiple layers of fabric that are breathable and weather proof, the layering of the double layers of fabric creates an air space that is ventilated through natural convection. When taken apart the tent components can be packed into a 1 m x 0.5 m x 0.5 m carrying case. The design is a marriage of traditional knowledge and modern technology, as it takes a very traditional form of architecture and builds on it, creating a space that adapts and changes to the occupants needs, and uses modern light weight materials that last longer than traditional materials and are easier to carry and assemble.

Repairing a damaged tent is relatively easy there are a number of commercially kits available that provide everything needed to repair a tent. Within these kits are seam sealers that reseal fabric along seams, there is also a hole sealer that repairs and prevents the spread of punctures in the fabric. The fabric that was chosen is self-repairing, taking a flat piece of metal, heating it and then pressing it against the fabric will repair any damage done to the seam as well as repair punctures, and tears. Repairing a damage pole requires a repair sleeve that is slide over the damaged piece and then duct taped into position. The poles are over engineered, and should a sections of the pole become damage it should not have an adverse affect on the structural integrity, although the piece should be replace.

The introduction of domestic reindeer or alternatively, the domestication and introduction of domestic caribou herds could have an equally beneficial affect on Canada's North. As caribou herds have declined, so have the nutrients in soil and in the waterways of the areas they once occupied. In the very simplest terms as deer forage, they remove 900 Kg of food per year, or 2.5 Kg per day. As the herd moves, these nutrients are then redistributed in the form of 20 Kg of methane a year and 270 Kg of fecal pellets.[290] The beneficial effects of reindeer is described by the Circum Arctic Rangifer Monitoring and Assessment Network (CARMA):

> "Through their forage intake and output (fecal pellets) have a complex and cascading effect strongly patterned over time and space […] Abundance can vary three-fold with cascading effects on plants and nutrient cycling as the plant communities shift from one state to another. Succession of plant communities as a response to density of foraging includes, for example, lichen – dominate shifting to moss and moss to grass states."[291]

Like the Maasia herders of African, Northern herders would also become an integral

290 http://www.carmanetwork.com/display/public/caribou+in+ecosystems

291 http://www.carmanetwork.com/display/public/caribou+in+ecosystems

part of the Northern ecosystem and their presence would reshape the land in a positive manner that would allow for greater biodiversity.

Living within the natural ecologies and being part of a complex system in a positive manner will create a style of living that is more in tune with traditional values and ethics, where quality of life is based on close family ties, and pleasure is gained through the knowledge of one's homeland and by having a close partnership with other living beings. When the Tununirarusirmut first met whalers more than 160 years ago, they told them: "what made them happy, what gives them the satisfaction of wealth, [is] an abundance of animals."[292] Herding will allow a complex relationship to exist and thrive. In addition to biodiversity, herding will also allow for diversity in ways in which Northern inhabitants live and occupy the North, their choice of occupation, and economic opportunities, and will aid in creating self-sustaining communities that are less reliant on outside resources.

The design of the living quarters, a tent structure is intended to be an embodiment of traditional values, and is not unlike traditional architecture of the region. It's a place where families can share in their successes and triumphs; it's a place where oral histories can be passed on amongst the sounds of their herd and the sounds of the environment, which supports the occupants. Rupert Ross, describes the close respect and the sense of belonging life on the land provides:

> "The sense of security that came from seeing life as a revolving affair was constantly reinforced by a multitude of things. The seasons followed one another in regular succession. So did every other aspect of the natural world, from ripening berries to spawning fish to mating caribou. Every part of creation repeated itself from year to year […] As each part of each season brought resources to their optimal condition for harvesting, families moved across the landscape in ritual and celebrated re-attendance at familiar locations. It is easy to see why each person would develop an attitude of respect for his or her surroundings; all of those surrounding were, in fact, home."[293]

The design presented here creates a sense of belonging, and like traditional architecture, it will become an integral part of the environment that will act as a place-marker from which cultural fabric of future generations can be hung. As the herders move across the land, the tent moves with them, unfolding and refolding to accommodate the occupants' needs, expanding and contracting as groups come together and separate.

When herds need less supervision during the calving period large groups can come together and share in tasks, such as: educating their children, fishing, gathering berries, and preparing hides. During these times of gathering, the tents can expand to their fullest, accommodating up to four families and allowing extended families to come together and share in life's labours. The moveable walls allow families to configure the interior space to meet their personal needs so that the interior can be occupied in a traditional manner with no partitions; alternatively, families can have their own private space or individuals can have their own private rooms.

During the summer and during fall and spring migration, a semi-permanent pad will be established upon which the tent will rest. These pads will ensure that the same area is occupied each year, limiting the damage done to the ground, and will act as markers in time and space. The pads are made of pine wood chips and pea gravel, both of which can be locally produced. As the herd migration alters over decades new pads will need to be established. As the old pads are reclaimed by nature they will leave behind the legacy of the people who once occupied that place. Future generations will be able to revisit and retell stories of their family's past, and ultimately the herds' migration will return to their old paths of migration, where upon the abandoned pads can be used again.

In the winter when the harsh climate demands the herds take refuge in wooded area, the tent contracts. The compact form of the tent takes up less space,

292 Lopez, 1989. Pg 41

293 Rupert, 2006. Pg. 109-110

making it easier to assemble in smaller areas. During the winter months, the tent uses a frame that sits on top of the snow and leaves no footprint behind. The space between the frames can be packed with snow — a natural insulator — this, coupled with a floor and reindeer hide will create a comfortable finished floor. The winter configuration also allows the occupants to configure the interior space in a manner that suits their personal needs.

Although the design is traditional in concept it is not completely removed from the modern world. A wind turbine will generate electricity year-round, and additional power will be created by solar panels during the summer and at times of low-level light. Energy will be stored providing the occupants' power even when there is no sun or wind. Power will allow the occupants to operate a computer, radio, and charge GPS and satellite phone batteries, and other electrical devices. At present, there are radio signals being projected across Canada's North and there is no reason for those who choose to reoccupy the land to be separated from the rest of the world. Satellite signals can be used to connect to the Internet and children can be educated using existing home-schooling resources that are available online. Satellite tracking collars can aid the herders in keeping tack of their herd, weather forecasts can help ensure the families' safety, and should an emergency arise, help can be contacted.

The design of the tent is intended to embody traditional principles of the occupation of the land while remaining connected with the rest of the world. To make this proposed low-key meat industry work, it is extremely important that the occupants follow traditional rules of ethics and conduct themselves in an ecologically conscious manner that will be beneficial to all living beings. Gary Farmer, an aboriginal actor, describes in an interview with the *Globe and Mail*, "Being Indian is a state of mind."[294] Framer's expression is fitting, in that survival within the natural environment requires a certain mind set that few people in the post-industrial world still have; perhaps the world would be a different place if more people had maintained that type of mind set. The design presented is intended to represent an ideological change that appreciates quality of life, and allows the occupants to be a part of an alternative, dynamic, and fluid reality. The intention demonstrates the possibility of creating a new standard of living that measured on quality of life and happiness, rather than being measured on an ever-escalating standard of living based on assets that will never be achieved, let alone maintained. By rethinking the way in which we occupy the land and how we measure ourselves the world could be a better place.

294 Farmer, 1989. Pg. C1.

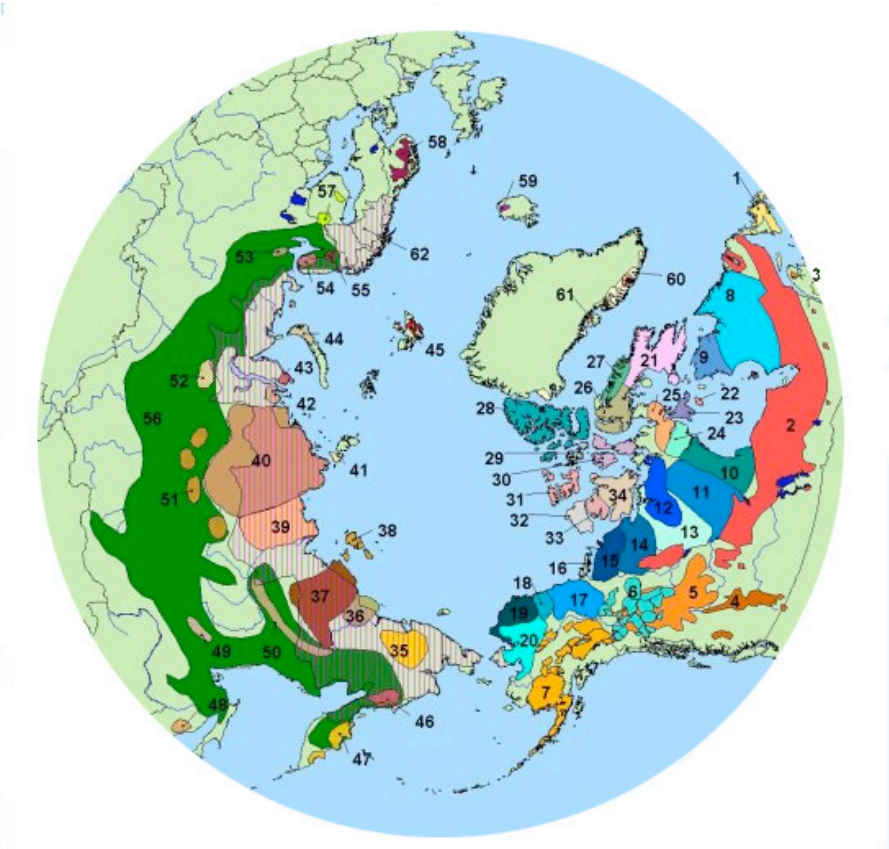


FIG.9.8. Circumpolar distribution of reindeer and caribou
This map depicts the extent of reindeer and caribou in the circumpolar region. The distribution of caribou is helpful in exploring the possible extent of habitat that could be used for reindeer husbandry, and this the extent of possible sites.

1. Newfoundland
2. Borea
3. Atantic
4. Southern Mountain
5. Northern Mountain
6. Yukon
7. Alaska
8. George River
9. Leaf River
10. Qamanirjuag
11. Beverl
12. Ahiak
13. Bathurst
14. Bluenose East
15. Bluenose West
16. Cape Bathurst
17. Porcupine
18. Central Arctic
19. South Baffin Island
20. Coats Island
21. Southampton Island
22. Lorillard
23. Wager Bay
24. North Baffin Island
25. Northeast Baffin Island
26. Eastern Queen Elizabeth Islands
27. lorillard
28. Wager Bay
29. North Baffin Island
30. Northeast Baffin Island
31. Eastern Queen Elizabeth Islands
32. Bathurst Island
33. Prince of Wales - Somerset Boothia
34. Western Queen Elizabeth Island
35. Banks Isand
36. Northwest Victoria Island
37. Dolphin - Union
38. Chukotka
39. Sudrunskaya
40. Yana-Indigirka
41 Novosibiriski Ostrova
42. Lena - Olenek
43. Taimyr
44. Severnava Zemia
45. Gydan
46. Belvi
47. Novaya Zemlia
48. Svalbard
49. Parapolskii
50. Kamchatka
51. Amur
52. Okhotsk
53. Yakutsk
54. Evenkiva
55. Nadvm-pur (Yamal Okrug)
56. Arkhangelsk Oblast
57, Terskii Bereg (kola)
58. Laplandskii Zapovednik (Kola)
59. Range of Forest Reindeer
60. Finan
61. Norway
62. Iceland
63. Greenland
64. Greenland Feral Reindeer
65. Range of Domestic Reindeer

FIG.9.9. Circumpolar distribution of domestic reindeer
Diagram depicts the extent of domestic reindeer. As seen in the diagram, the entire circumpolar region of Eurasia has a domestic reindeer population while the only domestic reindeer in North America remain isolated in Alaska. Interestingly, Canada has the same capacity as Eurasia to create and take advantage of the ecology in the region by creating a low-key meat industry.

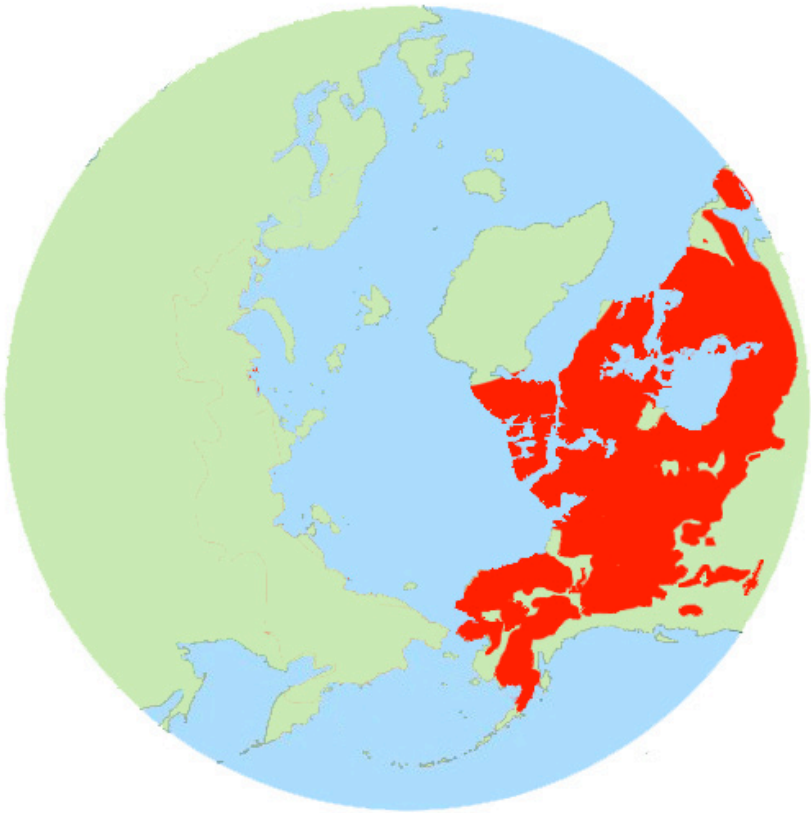


FIG.9.10. Possible circumpolar distribution of domestic reindeer in Canada
Diagram depicts the possible extent of domestic reindeer in Canada. Reindeer and carbiou are biologically the same and thus have the same habitat requirments. Nomadic herders could occupy this region.

Site Selection

Prior to the establishment of settlements, sites were selected based on their stainability. The decision of where to camp was made intuitively based on previous experiences. These seasonal and semi-permanent sites radiated a sense of self-assurance. If chosen wisely the site would provide the family with everything that was needed; if a poor decision was made, hardship would follow. Good sites would be reoccupied and returned to many times for all or part of a season, while poor sites would not be used again. One example of a good site that is still being used today in on the north bank of Loche Tulita in the western Northwest Territories. Here, a small group of Slavely Dene, consisting of five or six families, come every spring setting up wall tents and tepees running east–west along the site. They come to take fish, muskrat, and rabbit.[83] The site is arranged facing south, both the direction of the sun and water; the waterway is the means of entry to and from the site, while the back of the site faces the northerly winds. There are four key elements that are found in this site and any successful site: access to water, natural features that protect the site, appropriate size, and site orientation. In addition to having game to catch, these key elements are required to provide a safe and healthy site for the occupants.

Easy access to clean drinking water is essential. Water and ice can also be used and usually is the main method of transportation into the site, to hunting grounds and to future sites. With safety in mind, the site must have a high shore, one that ensures the site is well above high tide. The shore must be gently sloped to allow for easy launch, haul out, and storage of the canoes as well as easy movement of gear and caresses from the shore to the site. By selecting a site that is elevated, the occupants are given a privileged view, allowing them to watch out for the approach of family members returning and for sudden weather changes. During the winter months it is wise to choose a site that is away from ice congestion, as the movement of ice can be unpredictable and extremely dangerous.

In addition to having access to a waterway, other natural features that make for a good site include a gentle slope with good drainage. This will ensure the site remains dry, and during spring thaw and melt water and cold air will drain away.

It is also a good idea to avoid any depressions in the terrain as these areas will gather stagnant water and accumulate blowing snow. The ground should be solid, whether on continuous permafrost, bedrock, or raised beaches — all provide a solid base on which to set up. Soft ground will allow for uneven settlement, and many softer grounds such as bogs and sedge meadow are breeding areas for mosquitoes, while the harder grounds tend to discourage mosquitoes. During the winter months, a natural windbreak that protects from the northern winds is essential, and can be found in the protection provided in a forest, rock outcrops, or other natural land formation. It is also important to stay away from broken ground, as these areas provide ideal den locations for large predators including bears and wolves, and although these species are typically not interested in harming humans, they can be extremely territorial, especially when they have young.

Ideally, the site should be large enough to provide for the family's needs: drying rack, smoke house, and meat caches as well as storage space for canoes. If other families are also going to be using the site there should be enough space for them to set up without crowding; typically, 5 m or so between tents is ideal. All tents should be able to orient themselves to have equal access to water and views. There should also be the natural resources required in the nearby area: wood for fire whether it be dead fall, drift wood, or dwarf willows are important as having a food source within a few days' travel.

Last, the site should provide suitable orientation, allowing the tents to be oriented north-south, with the prevailing polar wind to the back and the front facing towards the sun. The reason for this is two-fold. First, it allows for maximized solar gain; occupants can benefit for the warm spring sunlight, while being protection from the wind. Strong prevailing wind entering a tent can not only cause discomfort to those inside, but can also cause the tent to explode, tearing the seams and rendering the tent useless in protecting the occupants from the elements. The second reason for this orientation is that predatory animals investigating scents from down wind will approach the site from the front giving the occupants the opportunity to spot their approach more easily.

It should be noted that the selection of sites was primarily based on personal experience and knowledge of elders — making selection was second nature to those who lived off the land. Sites were selected to maximize the gain; choosing places where fish ran every year or caribou cross, and choosing to return or not was based on experiences gained and lessons learned. These four key elements: access to water, appropriate natural features, size, and orientation are the foundation to good site selection. However, they are not the only considerations; site selection is a learning process that is based on past experiences incorporated with base knowledge.

Since caribou and reindeer are biologically the same they have the same habitat requirements. Areas of high concentration represent ideal locations for possible sites as these area can support large numbers of caribou and would thus also be able to support reindeer. The base map is presented to help the viewer identify where the herd migrations occur relative to local communities.

The series of maps following the base map demonstrate the movement of the three main caribou herds in the Northwest Territories throughout the year. Nomadic herders would follow a similar pattern and sites would be established according to the criteria formed for selecting a site and the herd's movement. In the summer and winter the herds do not require the same level of supervision as they do during migration. Because of this, semi-permanent sites maybe established to allow families to come together and share in common activities, while winter sites need to be more flexible as they are dependent on weather conditions such as snow depth, and ice coverage, which can vary year to year. As a result, the winter sites are not fixed.

Distribution of Caribou Herds in Northwest Territories

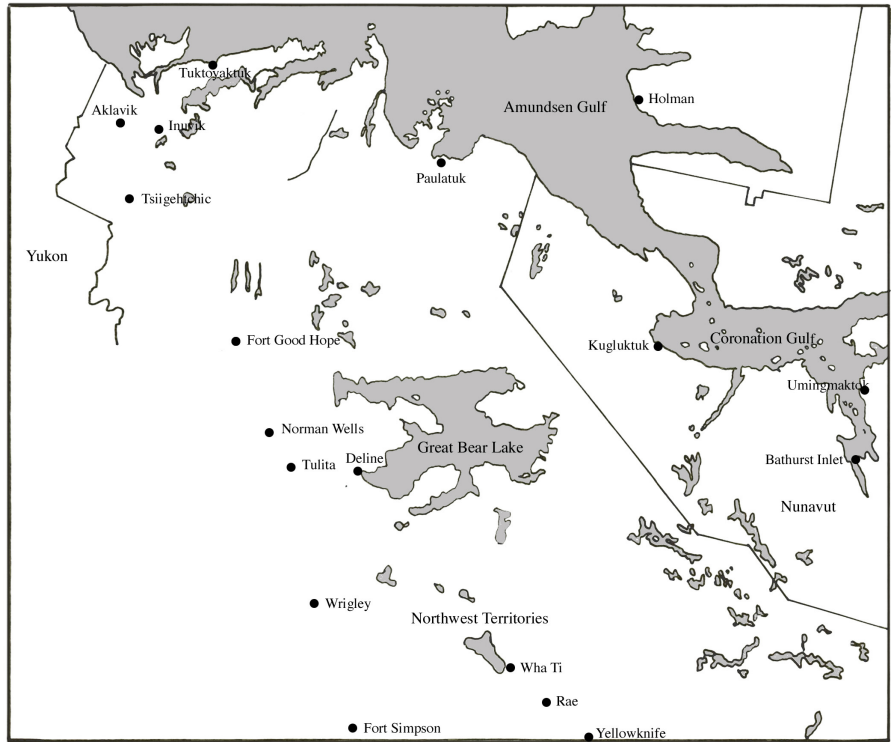


FIG.10.1 Base map
Maps by author. It should be noted that the extent and distribution of the herd is based on the satellite images of collared caribou and may not represent the full extent of the herd. The maps do, however, demonstrate the general movement of the herd and areas of herd occupation, which will aid in selection of sites.

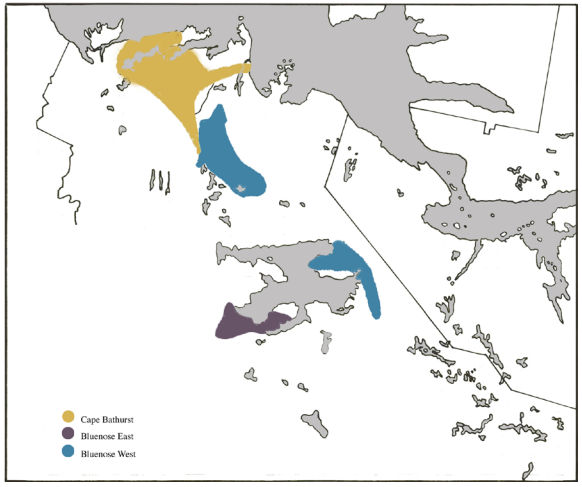


FIG.10.2. Distribution of caribou January 1st

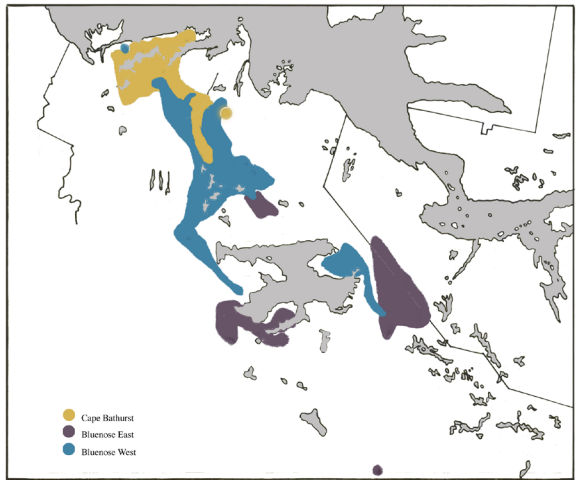


FIG.10.3. Distribution of caribou January 15th

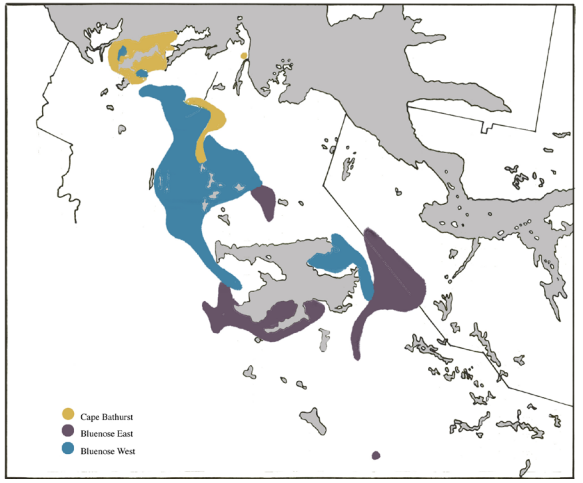


FIG.10.4. Distribution of caribou February 1st

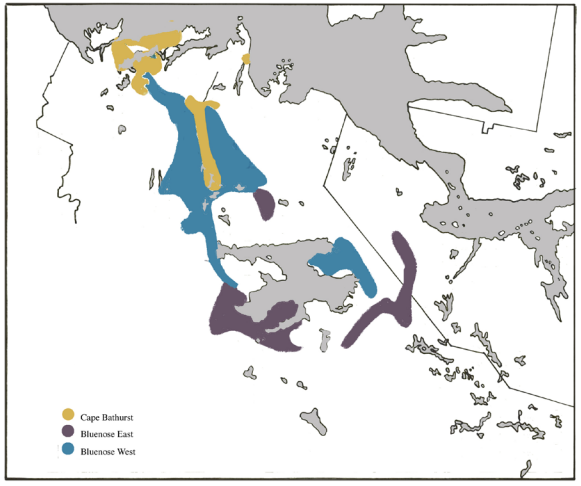


FIG.10.5. Distribution of caribou February 15th

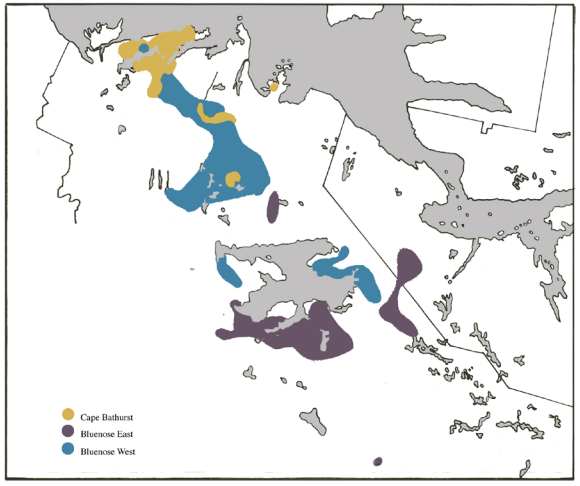


FIG.10.6. Distribution of caribou March 1st

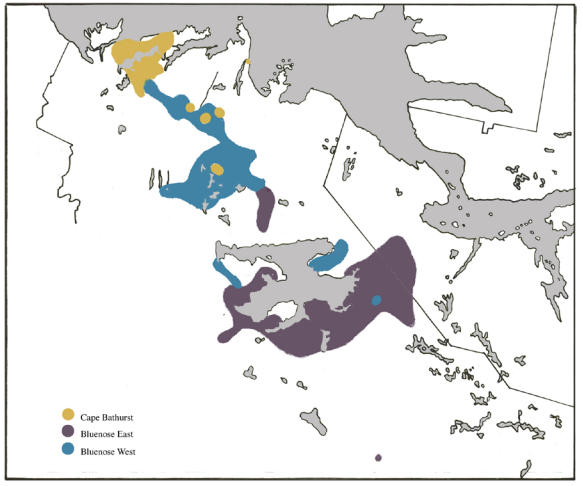


FIG.10.7. Distribution of caribou March 15th

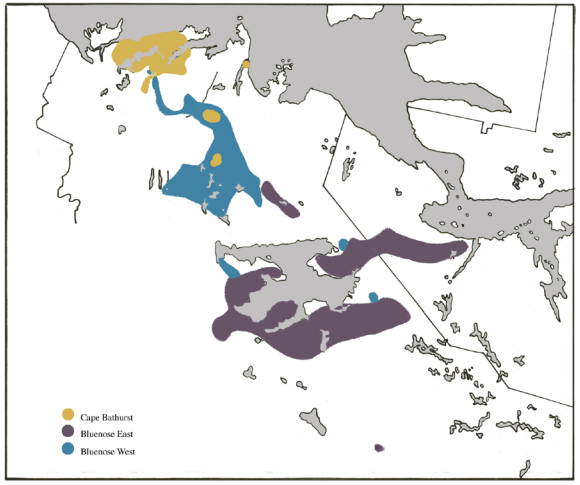


FIG.10.8. Distribution of caribou April 1st

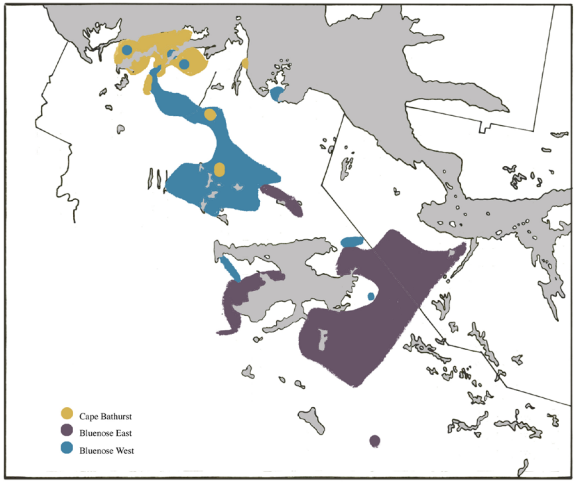


FIG.10.9. Distribution of caribou April 15th

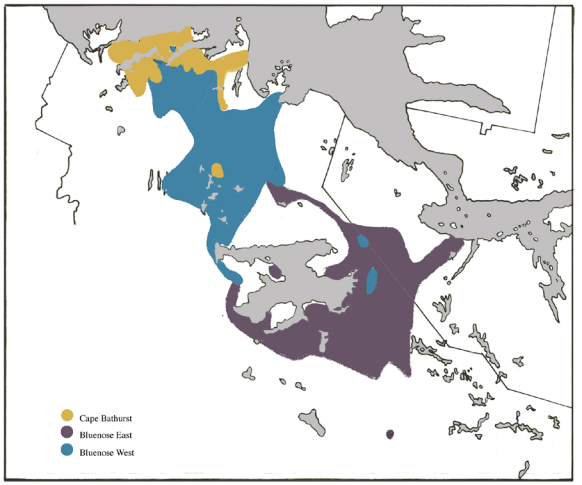


FIG.10.10. Distribution of caribou May 1st

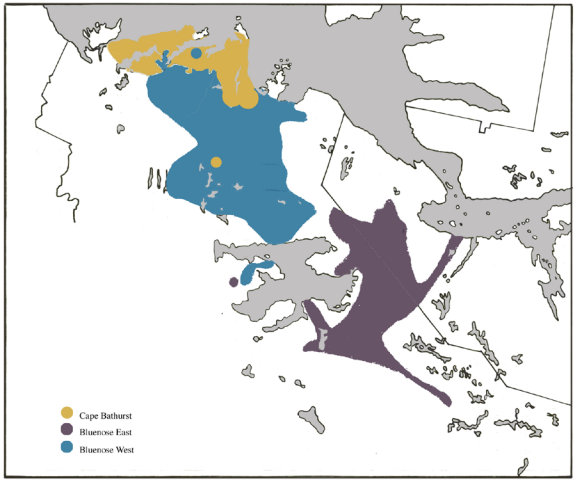


FIG.10.11. Distribution of caribou May 15th

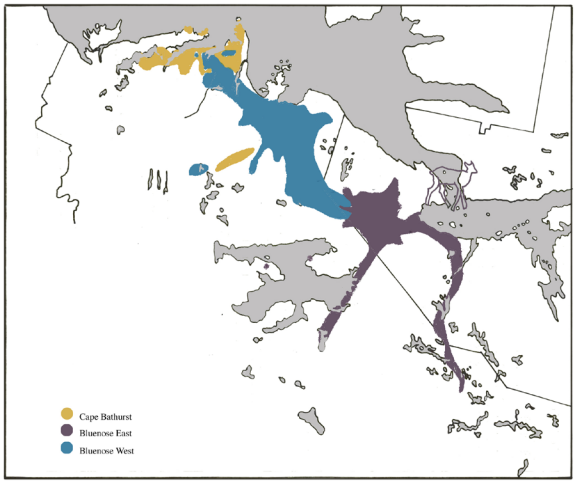


FIG.10.12. Distribution of caribou June 1st

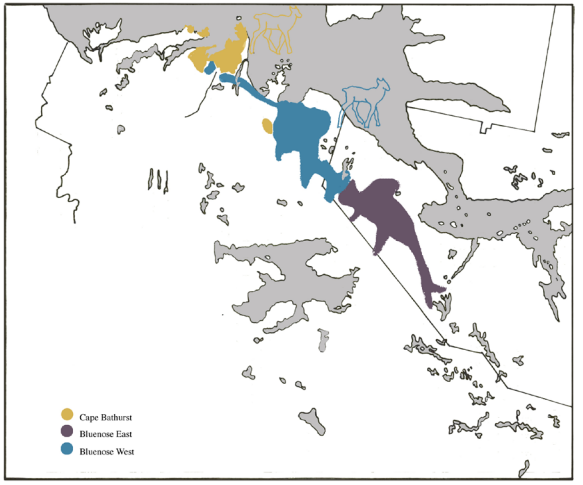


FIG.10.13. Distribution of caribou June 15th

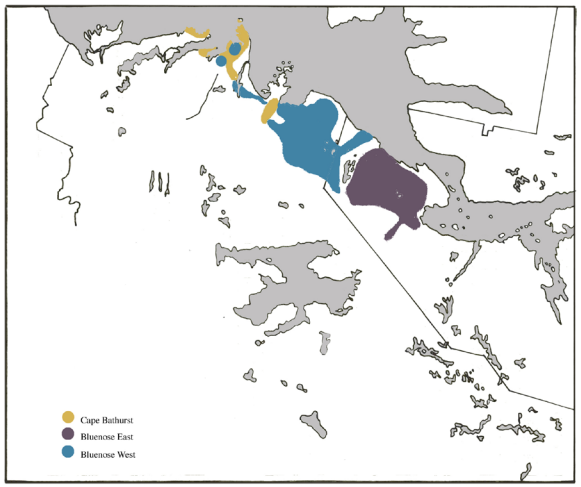


FIG.10.14. Distribution of caribou July 1st

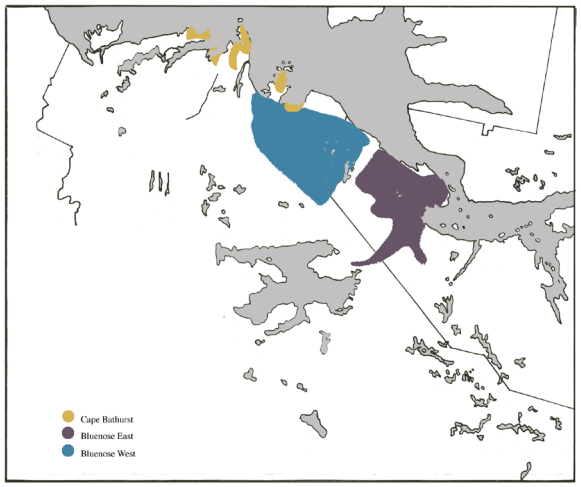


FIG.10.15. Distribution of caribou July 15th

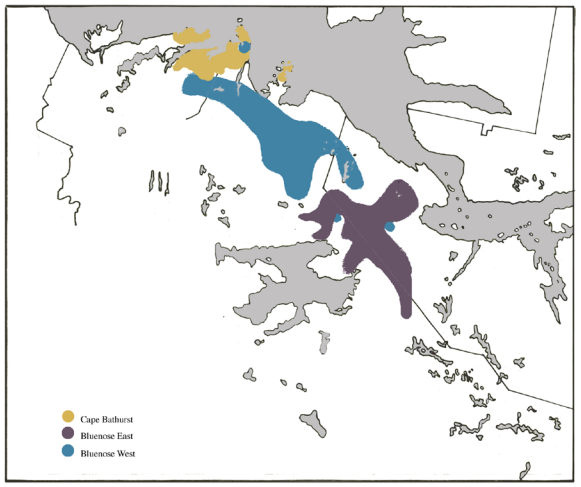


FIG.10.16. Distribution of caribou August 1st

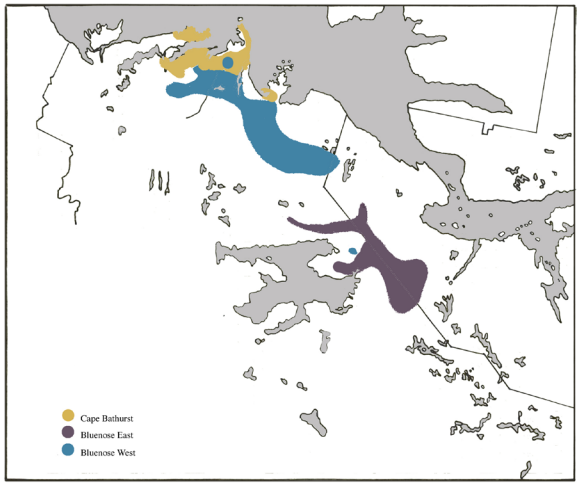


FIG.10.17. Distribution of caribou August 15th

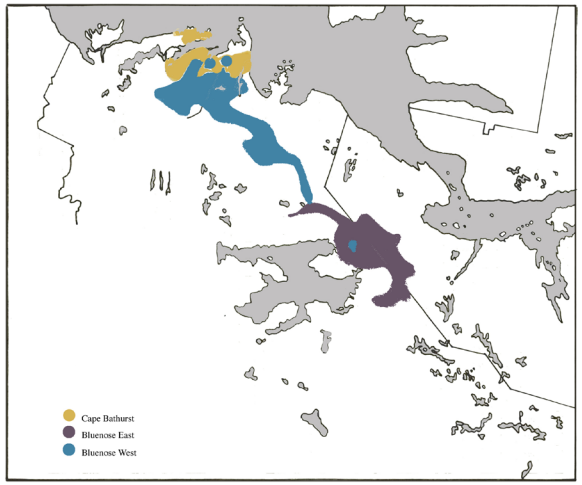


FIG.10.18. Distribution of caribou September 1st

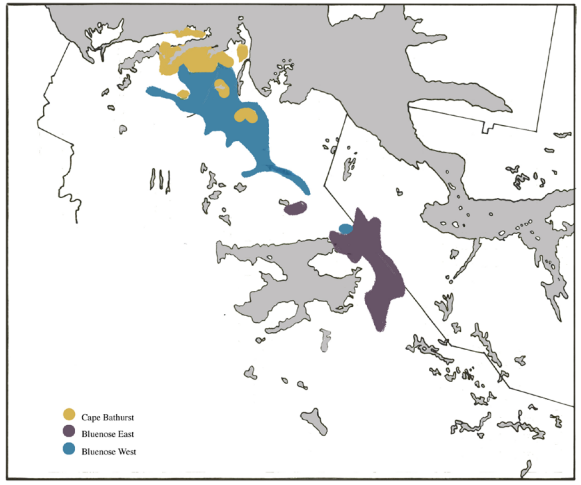


FIG.10.19. Distribution of caribou September 15th

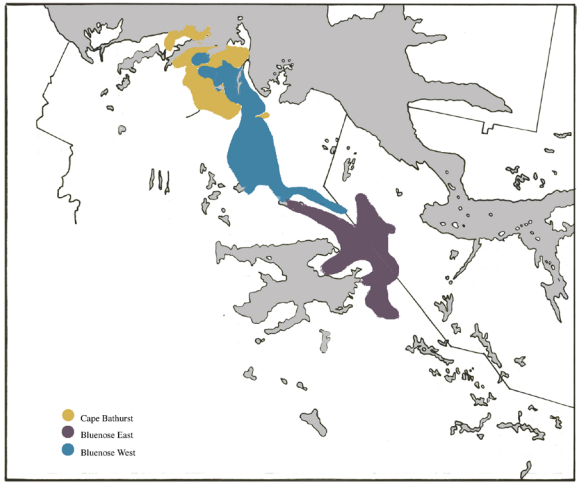


FIG.10.20. Distribution of caribou October 1st

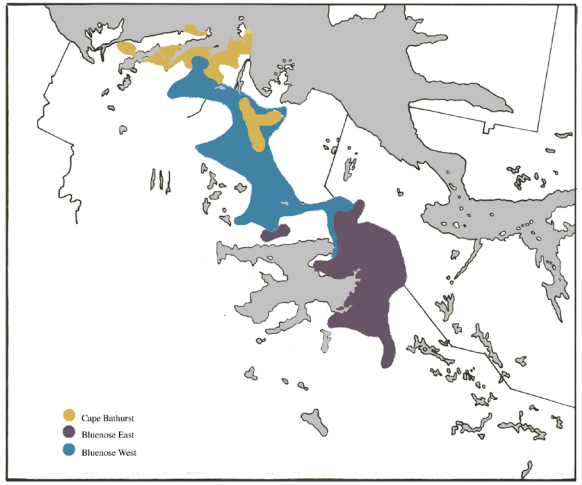


FIG.10.21. Distribution of caribou October15th

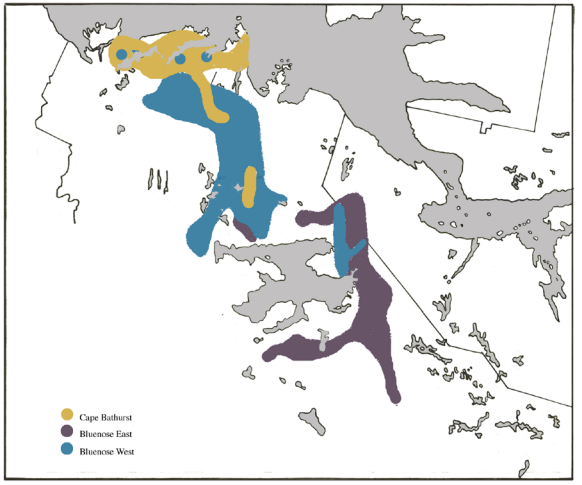


FIG.10.22. Distribution of caribou November 1st

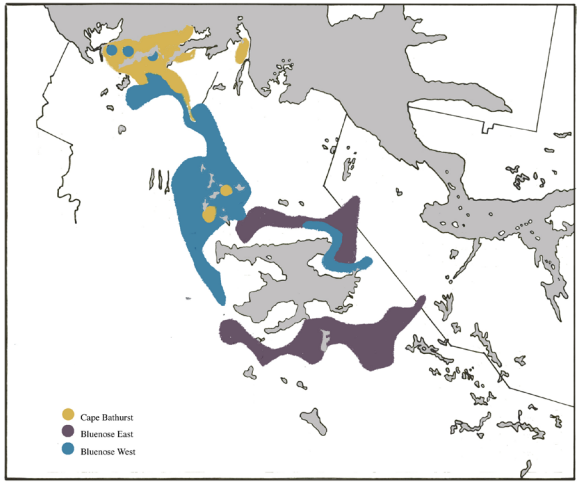


FIG.10.23. Distribution of caribou Novermber 15th

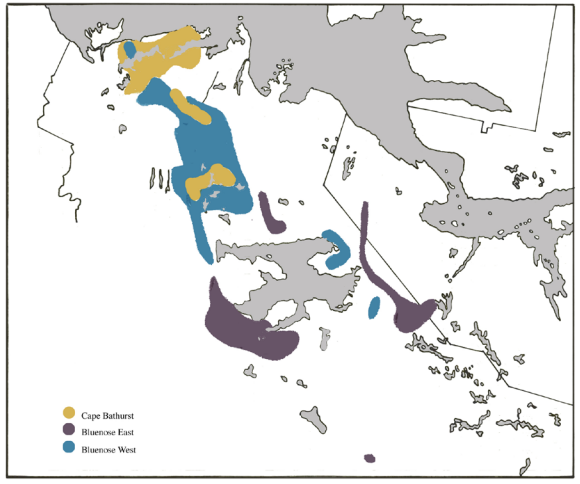


FIG.10.24. Distribution of caribou December 1st

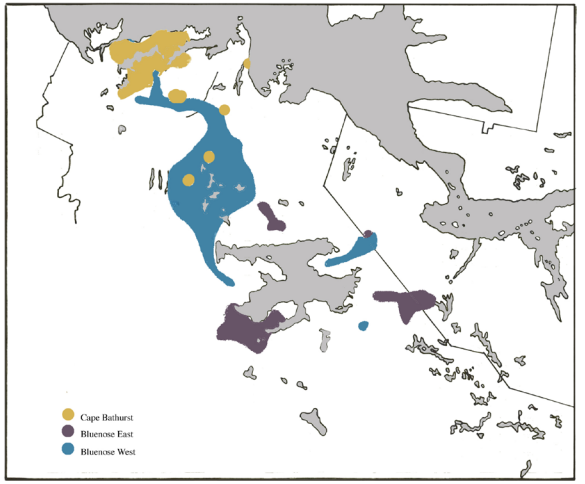


FIG.10.25. Distribution of caribou December 15th

Possible Sites

FIG.11.1. Map of one set of possible sites (next page).
Map represents site that may be used by one family group. The selection of the site was based on existing herd movements. Since reindeer and caribou are biologically the same, their food and environmental requirements are identical, hence the use of caribou movement to determine possible sites for reindeer. The previous maps depict herd movement over the course of the year. Based on these maps, several sites were selected. The majority of these sites would be used on multiple occasions during the year. For instance, the during the spring and fall migration, the herd passes the same general area, so spring and fall sites would be the same. The summer calving ground would be used only during calving, which is the only time the herd occupies that area. Winter sites are flexible; however, a couple have been suggested to represent the general area where a campsite may be set up.

FIG.11.2. Late winter campsite

FIG.11.3. Early fall campsite

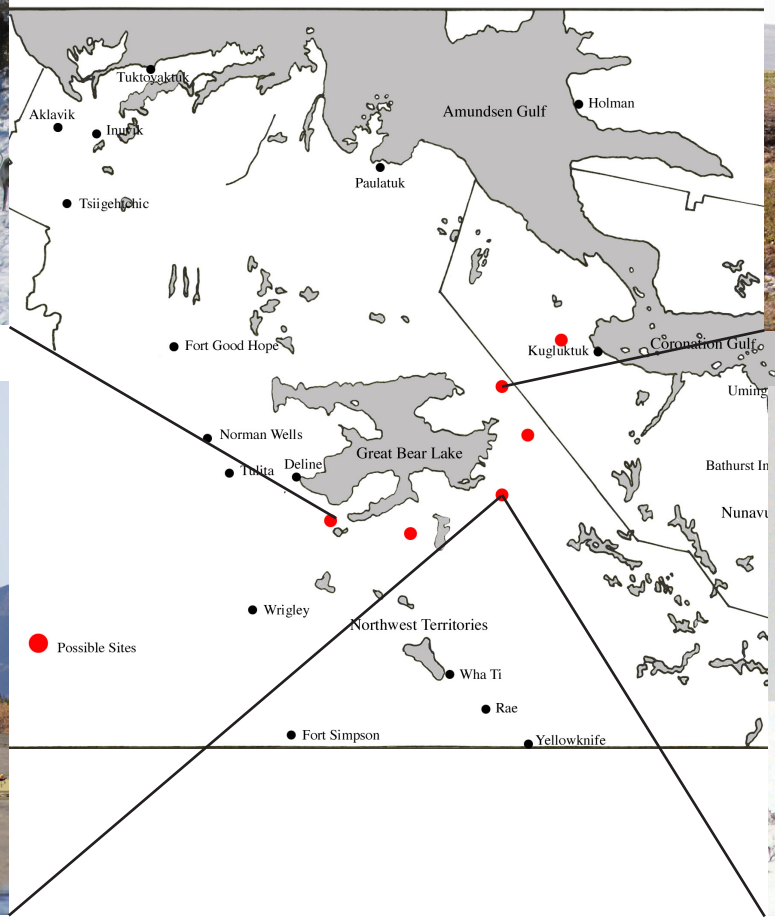


FIG.11.4. Summer campsite

FIG.11.5. Early spring campsite

Assembly

1. Select site.
2. Begin by laying out and checking all pieces. Ensure they are clean and undamaged; mend any damage as required, where possible.
3. In winter conditions, begin by packing down the snow with snowshoes or skis, in the area where the tent will be assembled, creating a firm base. Create a gentle slope away from the centre to allow any melting snow to drain away from the tent. During spring thaw, slope the snow as done in the winter; use a shovel to create a small trench about a foot away from the tent's edge. This will allow water to pool and not run back into the tent, keeping the base dry.
4. Assemble the base. The frame is only assembled in the winter configuration. Note: the base is color-coded to aid in assembly — match like colours. Begin by assembling the outer pieces (see FIG.12.1). The frame easily slides together into slots.

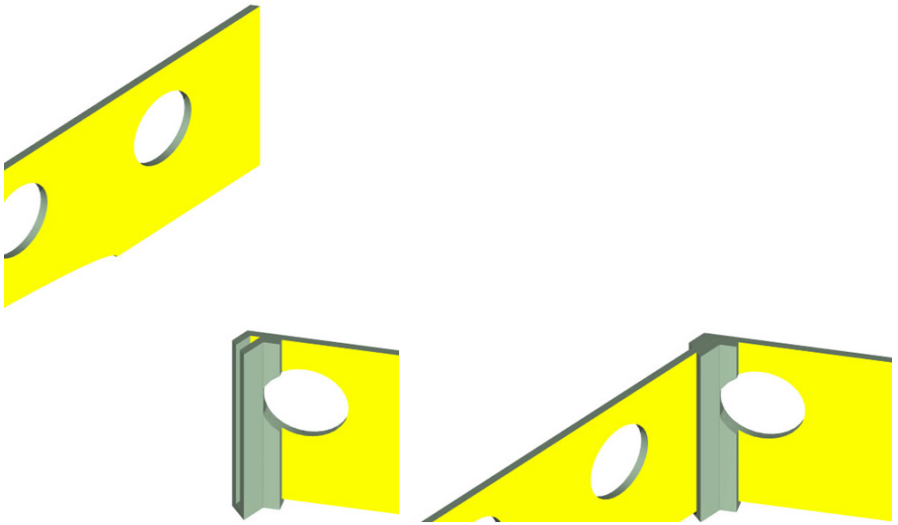


FIG.12.1. Frame: the frame is assembled by sliding components together.

5. The longer pieces are broken into smaller pieces to make them easily managed. These pieces are connected by being placed side-by-side and sliding them into a bracket (see FIG.12.2). Once the outer components are assembled, slide the secondary pieces into place once again using the brackets as required. Last, slide the pieces that run parallel into place. With this, the winter frame is complete (see FIG.12.3).

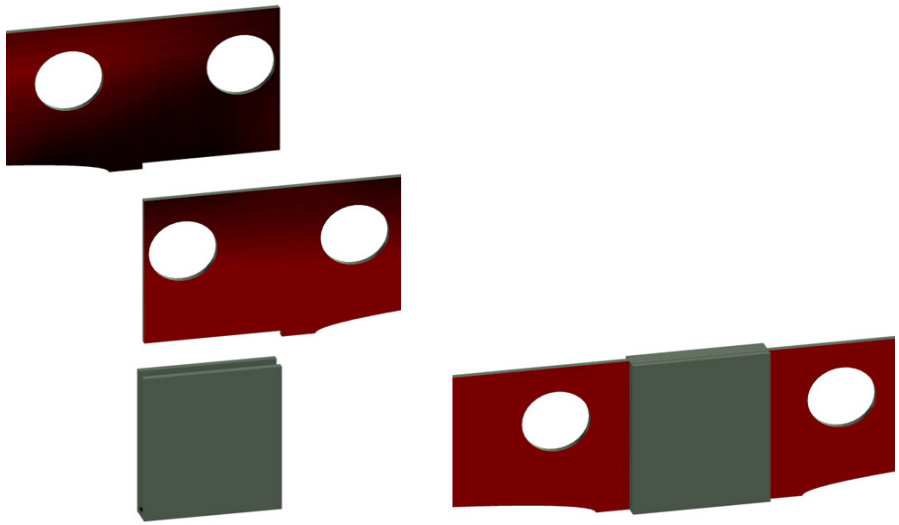


FIG.12.2. Frame: the larger pieces are divided into smaller components to make them easier to manage. These pieces are assembled using the bracket.

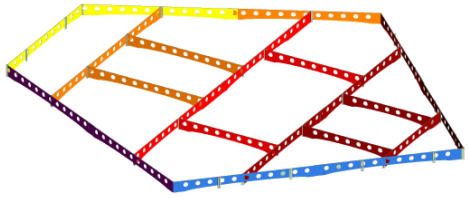


FIG.12.3. Winter frame completely assembled.

6. Once the frame is in place, if extra insulation is desired snow and pine needles can be packed into the frame.
7. Once the frame is assembled attach the ropes (see FIG.12.4). These will form a firm base on which the floor will sit (see FIG.12.5).

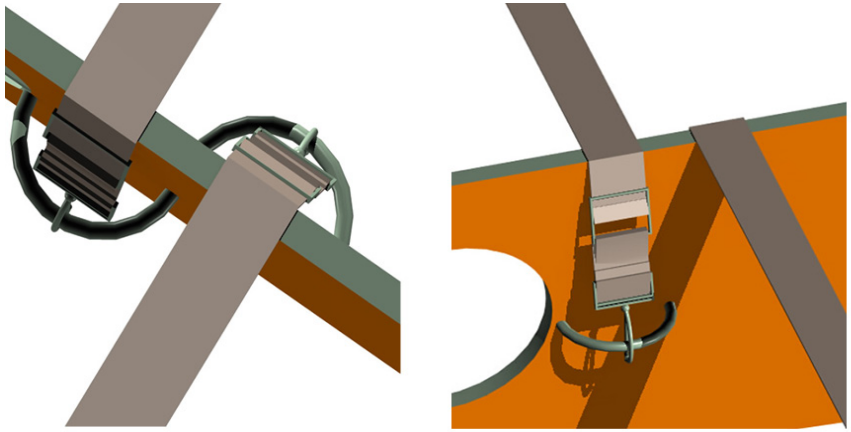


FIG.12.4. Ropes are strung over frame and then fastened.

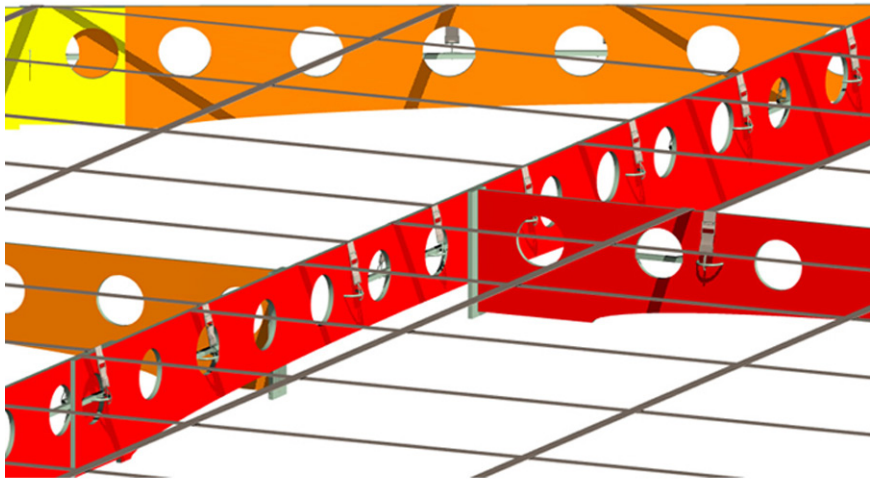


FIG.12.5. Ropes assembled.

8. Once the frame and ropes are in place, put the tops on the frames, once again, matching like colours. These tops will provide rigidity to the frame, not unlike a wide flange. These pieces will easily snap onto the frame (see FIG.12.6 and FIG.12.7).

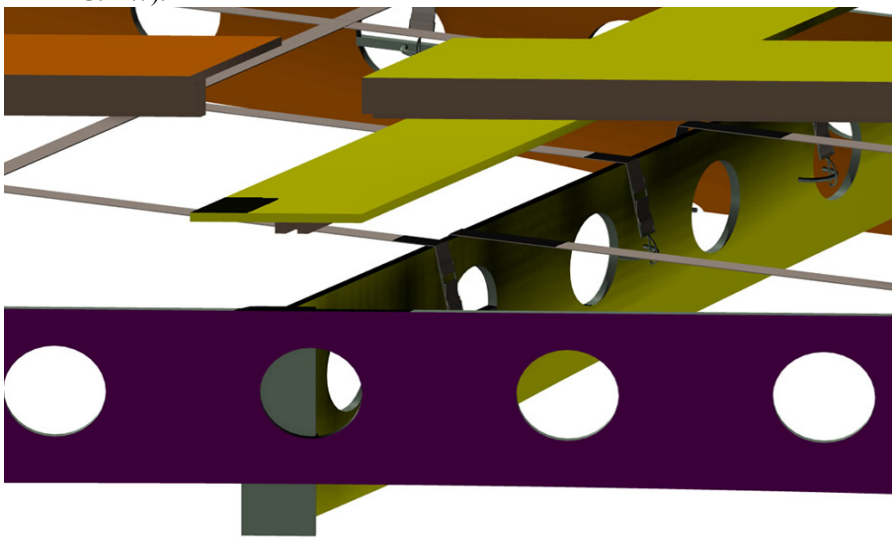


FIG.12.6. Beam tops being snapped into place.

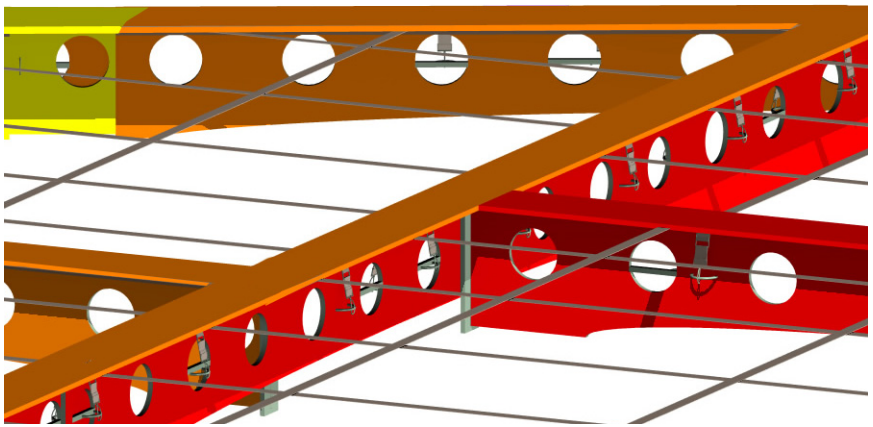


FIG.12.7. Beam tops in place.

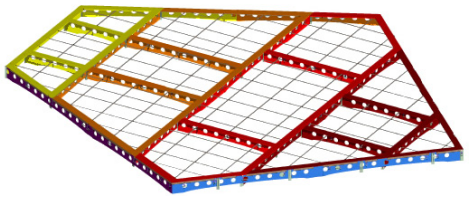


FIG.12.8. Completed frame assembly prior to laying the floor.

9. The frame is now complete (see FIG.12.8). Place the floor; the floor is placed on top of the ropes and in between the beam tops (see FIG.12.9).

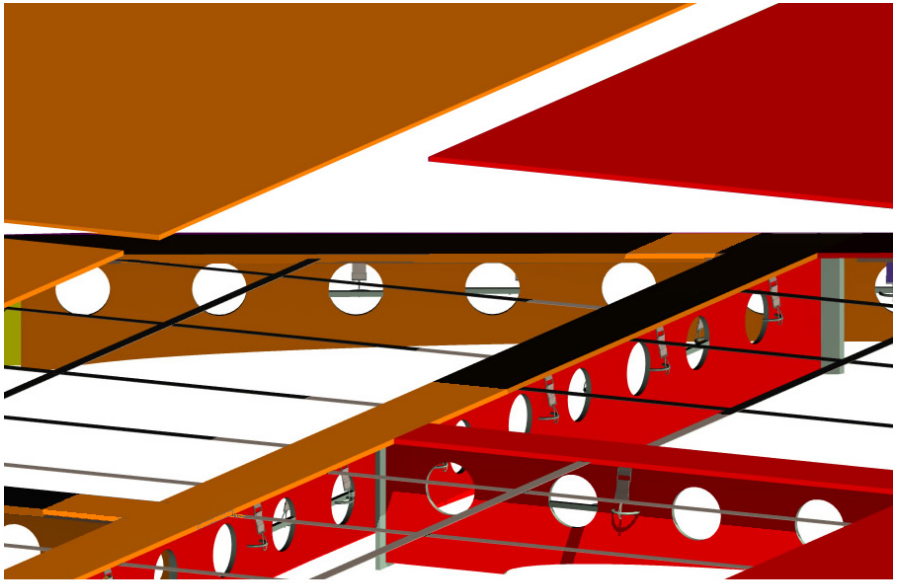
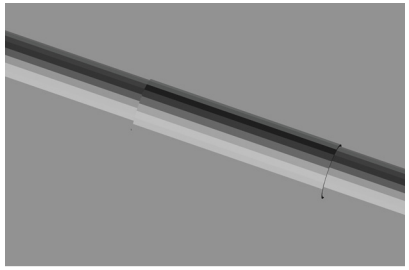
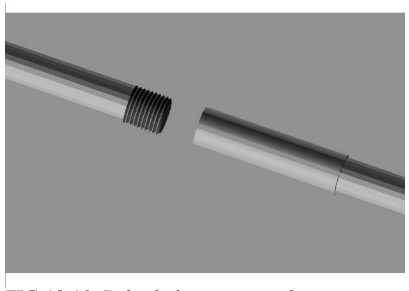


FIG.12.9. Floor being placed.

10. The floor for the winter configuration is now complete.

11. Next, roll out the tent over the floor, taking care not to damage the fabric. Fold the tent to the desired configuration using the plastic clasps to hold it in place.
12. Assemble the poles. Each pole should consist of four pole lengths: a base piece, two middle, pieces and a top piece (see FIG.12.10). They are assembled by twisting them together (see FIG.12.11). The winter configuration requires five poles, while the summer configuration requires eight. Each pole is comprised of three individual lengths of pole (see FIG.12.12).





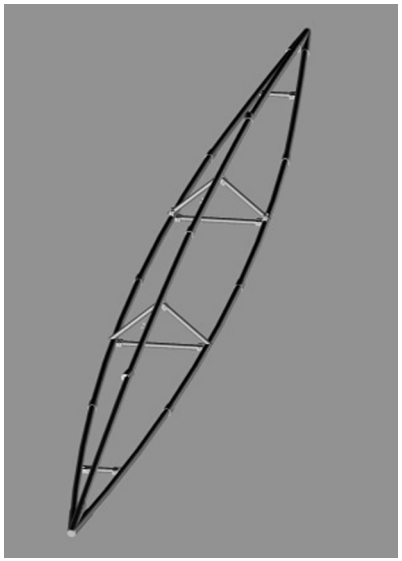


FIG.12.10. Poles being connected.
FIG.12.11. Assembed pole (right). Note the four lengths of poles and the four points where the poles have has cross-bracing.

13. The poles maintain their strength and rigidity, by using cross-bracing. The cross-bracing uses three lengths of aluminum tubing that are held in place using a pin connection. The pins slide into place and are held there with a washer (see FIG.12.14).
14. Once each individual length of pole is completed, snap them into the base (see FIG.12.13).

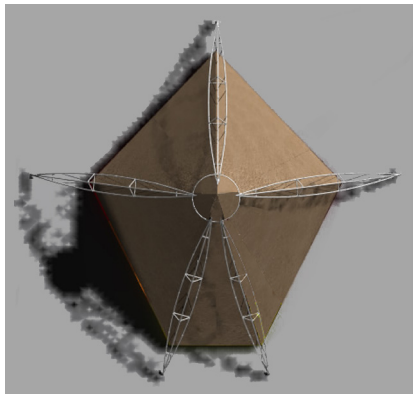


FIG.12.12. Winter configuration roof plan requires five completed poles (above).

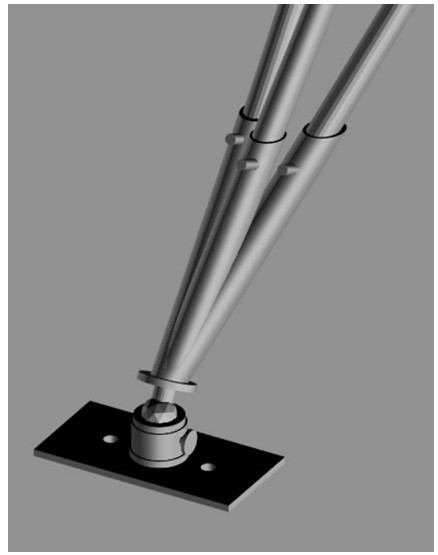


FIG.12.13. Poles assembled to base (right). Poles will slide in and lock into place; to remove them push the release.

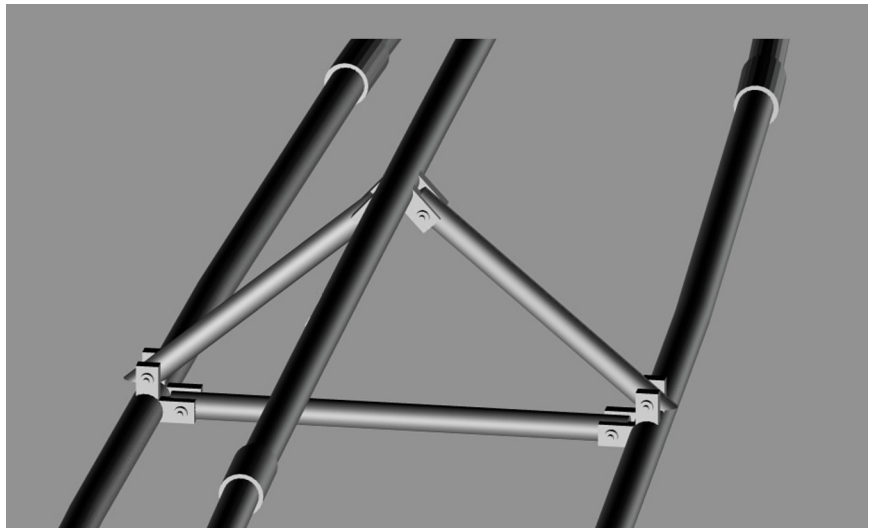


FIG.12.14. Cross-bracing of poles is held in place by pin connection.

15. Place the top component onto the assembled poles (slide into place as they did for the bottom, locking). These will then slide onto the ring.
16. Place the ring in the centre of the tent. Open the ring by twisting and sliding the close. The close has threads not unlike a screw that ensure it will not open on its own (see FIG.12.15). Place the required number of poles on the ring and arrange them in the desired configuration. Secure the ring (see FIG.12.16).

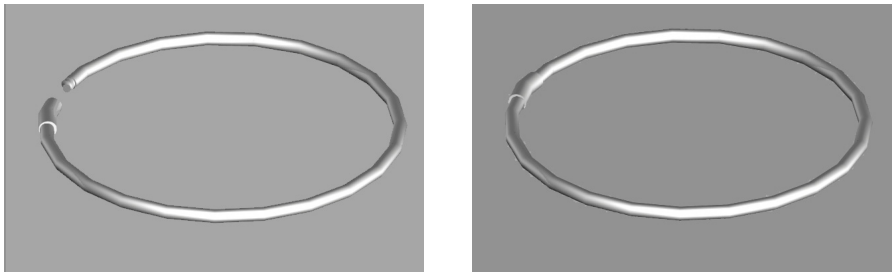


FIG.12.15. Ring open (left), ring secured (right)

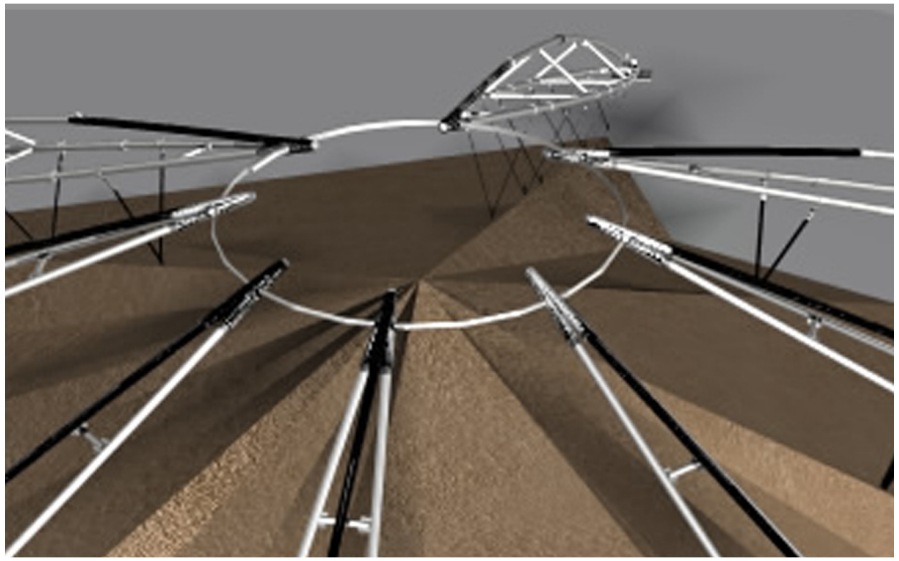


FIG.12.16. Ring in place, summer configuration

17. Attach the tent to the poles using the clasp provided (see FIG.12.17 and FIG12.19).
18. Loosen the base of the poles; it is a ball and socket connection (see FIG.12.20). This will allow for the angle of the poles to be adjusted. Slowly begin to raise the poles raising opposite poles at the same time. Once the desired angle is reached, adjust the base of the pole by turning the knob to release and lock the pole into place at the desired angle.

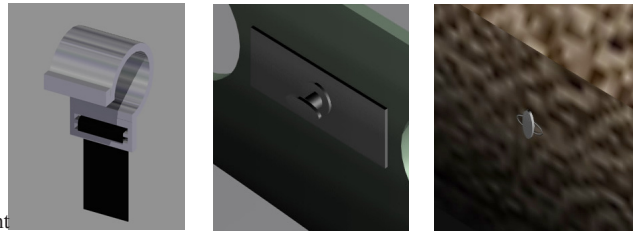


FIG.12.17. Clasp detail (immediate right).

FIG.12.18 Connection point for tent to frame (middle). Tent attached to frame (far right).

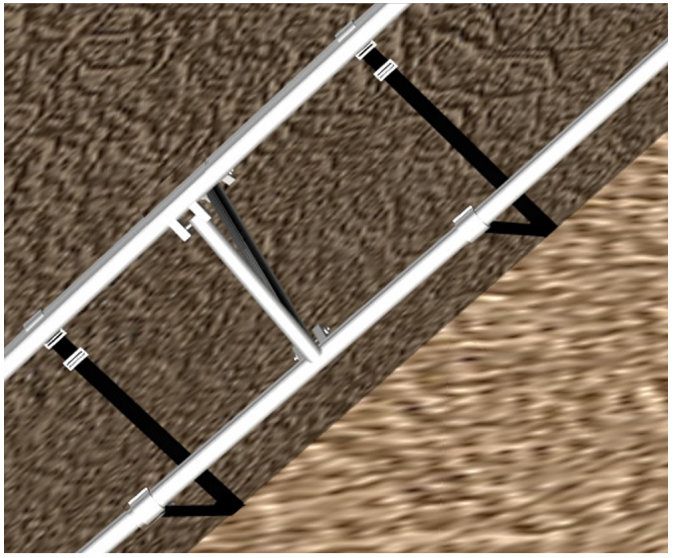


FIG.12.19. Clasps attached to the poles (above).
FIG.12.20. Base connection detail, ball and socket connection (right).

19. Secure the tent to the base by turning the catches (see FIG.12.18).
20. The outside of the tent is now complete (see FIG.12.21). Note that if using the summer configuration, there is no need to assemble the frame and the tent sits directly on the site pad. The directions are the same except that the summer floor is laid inside the tent once it is assembled (see FIG.12.22).

FIG.12.21. Winter tent completed.

FIG.12.22. Summer tent completed.

Design

Tent Configuration Plan

The tent is designed to expand and contract according to the family's needs, allowing multiple families to come together and share in common tasks, to adjust their dwelling based on their own needs. In the winter months when the herd disburses into smaller groups, family groups may separate from their larger kinship groups to remain with their respective herd. The smaller compact form of the winter configuration is also easier to heat during the cold months of winter.

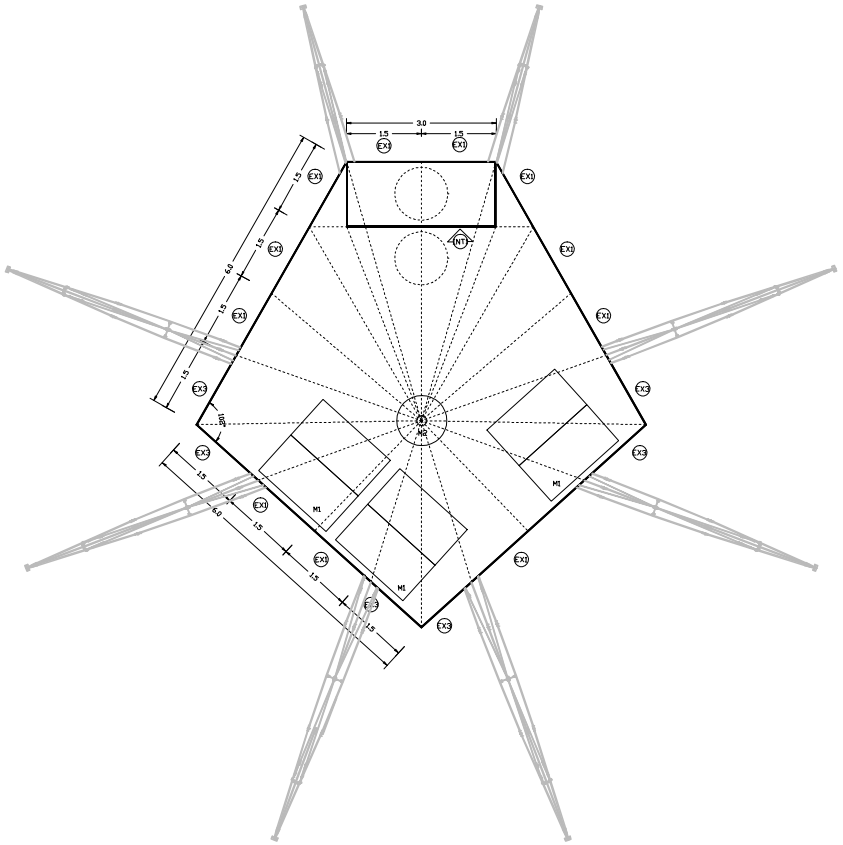


FIG.13.1. Winter configuration plan.

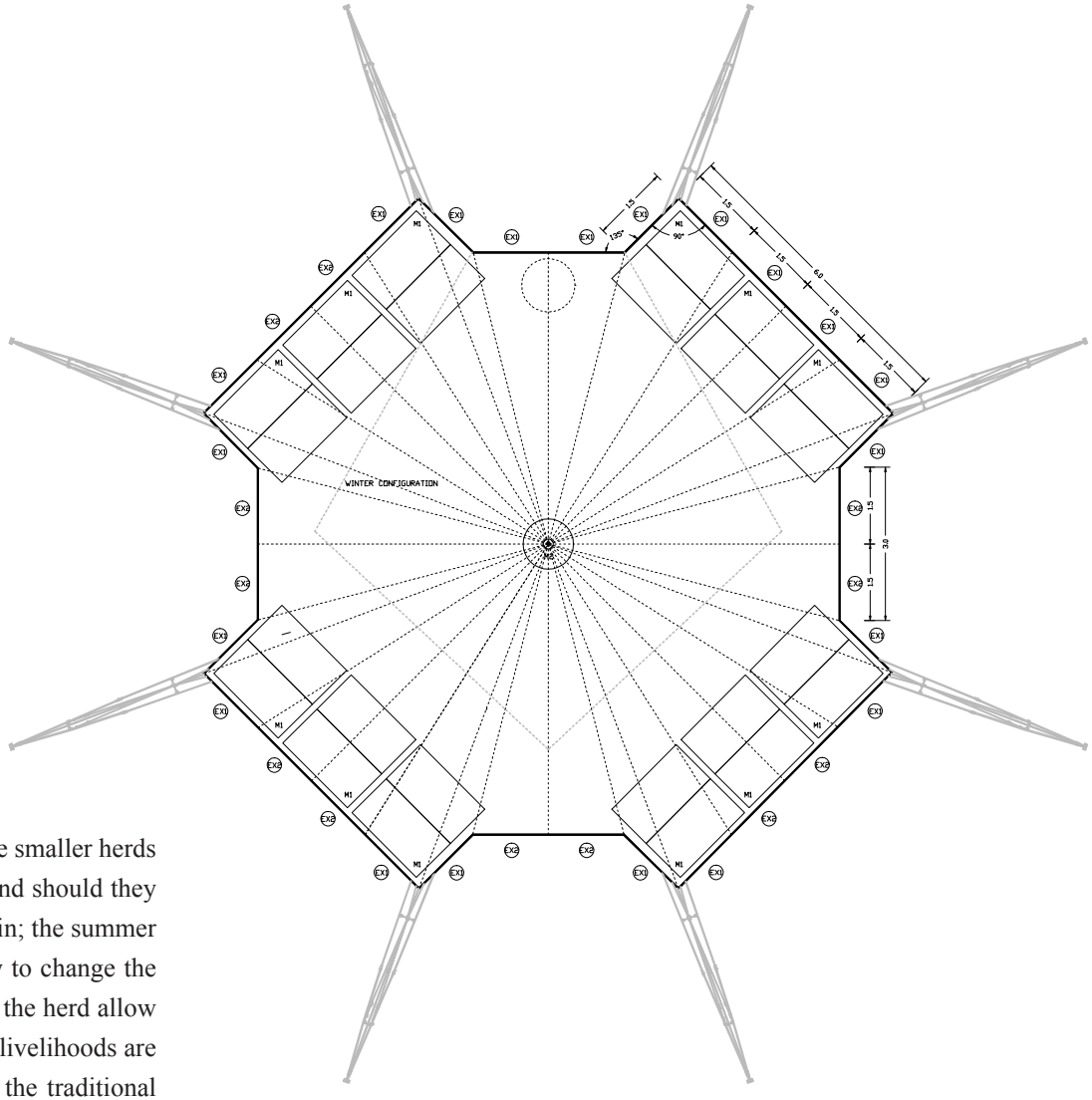


FIG.13.2. Summer configuration plan.

During the summer months and times of migration when the smaller herds come together to form a larger herds, families may come together and should they choose, they can share a common living space with their extended kin; the summer configuration can house up to four families. The fluidity and ability to change the structure to accommodate a family's needs and the natural cycles of the herd allow the occupants to live in tune with the environment upon which their livelihoods are based, creating a new relationship with the land that is not unlike the traditional relationship once practiced.

Winter to Summer Transition

The layering of materials created by folding the tent fabric from the summer to the winter configuration will create multiple air cavities, which will help insulate the structure, using the same principles of the space suit. The layering of fabric will help insulate the structure. Each layer of fabric will have an air film. Hence there will be one on the exterior on each of the two sides of the fabric that are folded together as well as on the interior, creating a total of five layers of air film, coupled with the air space between each layer of fabric. Natural convection will help prevent condensation from forming. Additional insulation can be achieved by piling snow around the base of the structure, and filling the air space with dried grasses and pine needles.

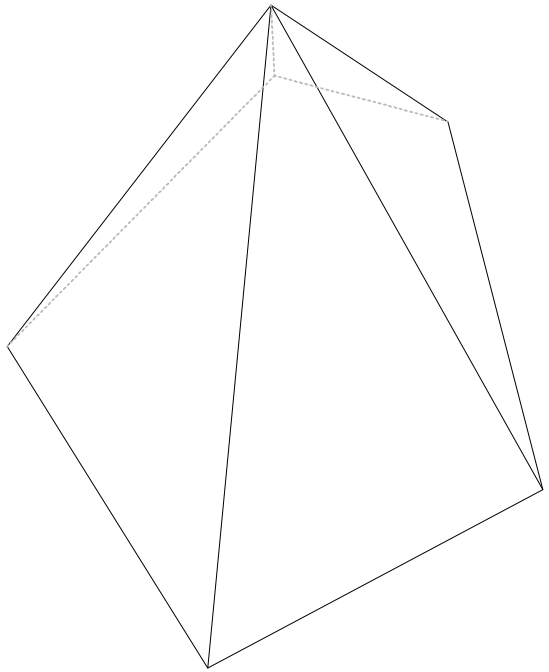


FIG.13.3. Winter configuration.

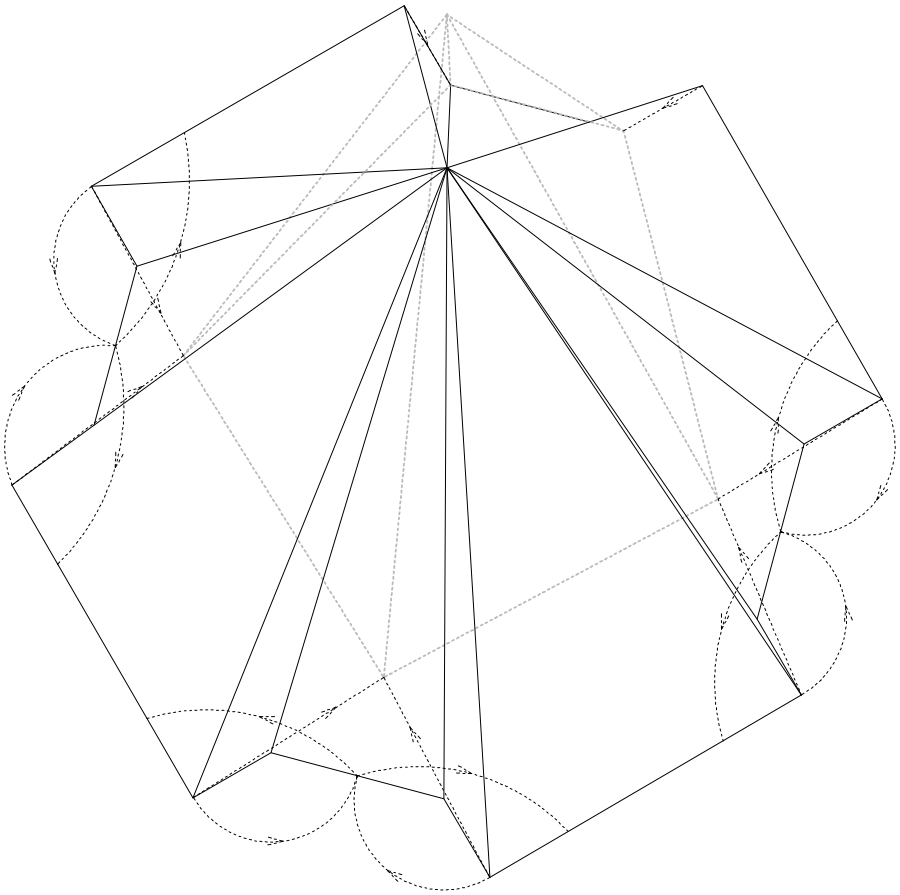


FIG.13.4. Transition.

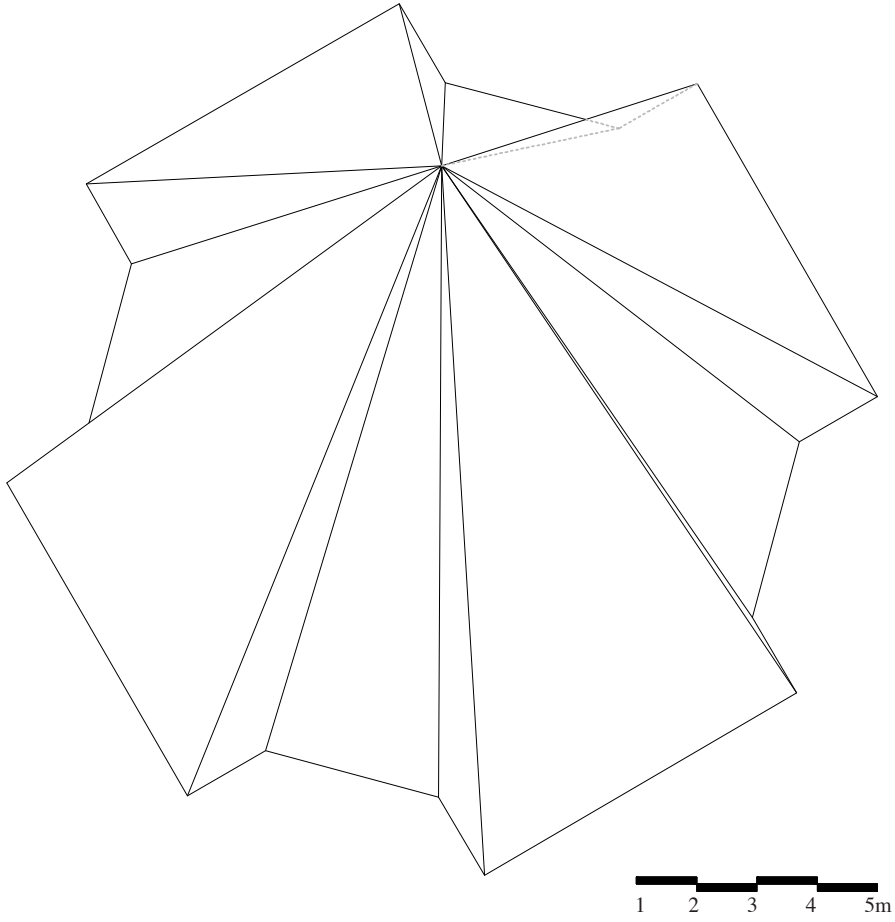


FIG.13.5. Summer configuration.

Winter Configuration

Although simple in appearance, the tepee is perfectly adjusted to suit the users' need. The small compact form makes it easy to heat in the winter. Like traditional architecture, the design takes a holistic approach to living, allowing life's activities to flow, and all aspects of life to occur without interruption of barriers. It is a place where families can share in life's activities and live in unity with the natural environment.

FIG.13.6. Computer model, front view.

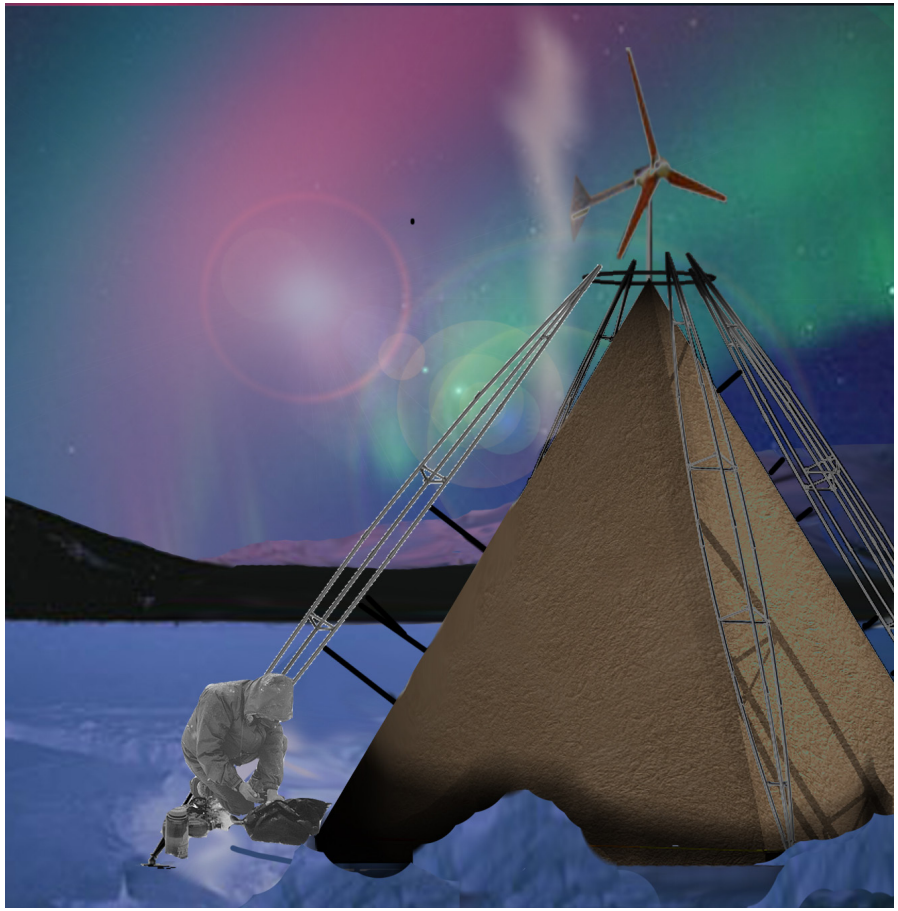


FIG.13.7. Computer model, rear view

The rear of the structure faces towards the wind, while the door faces away from it. This is important as it will ensure that if the door is left open the wind will not explode the tent. The rear is designed with a steeper slope and a diamond shape. This prevents snowdrifts from piling unevenly around the structure and possibly collapsing it, while also encouraging the wind to go around the tent, minimizing the surface area exposed to the prevailing winds and maximizing the interior space.

Unlike Euro-Canadian homes, which are highly compartmentalized, with each part of life having its own room (the kitchen for preparing food, the dinning room for eating, the bedroom for sleeping, etc.), the design takes a traditional approach where all aspects of living are integrated. There is also the option to subdivide areas for privacy as will be explored later.

FIG.13.8. Computer model, sectional view

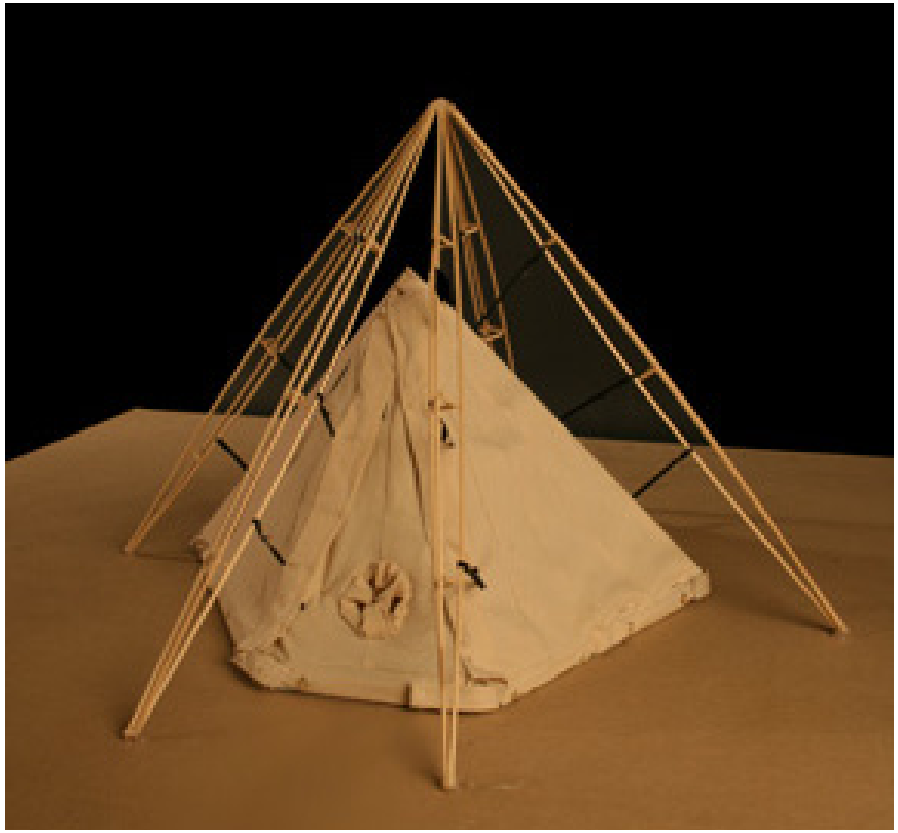


FIG.13.9. Physical model, front view.

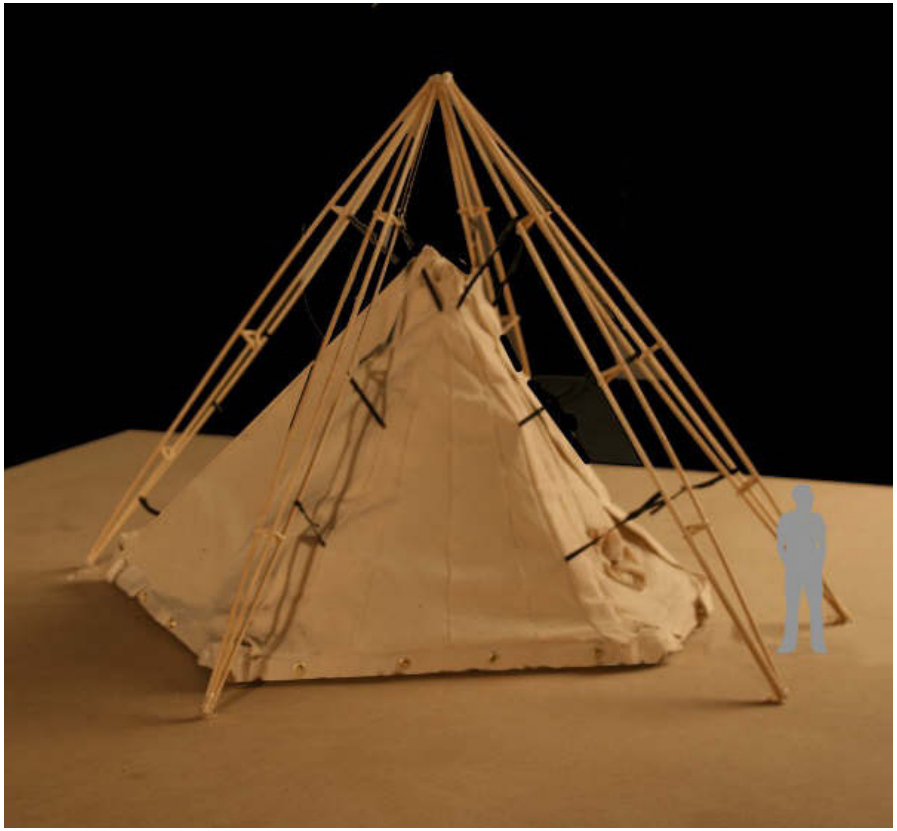


FIG.13.10. Physical model, rear and side view.

Winter Configuration:
Interior Perspective

The interior perspective demonstrates the possible configurations within the structure, which can be changed depending on the occupants' desires. The partitions hang from the wall of the tent and go to ground creating a visual screen. In the winter this screen can be placed between the beds (see FIG.13.12). Also, there is an entrance way that can be used in the winter; this entrance prevents wind from directly entering into the room and creates a threshold. In addition, drop-down shelving over the entrance in the winter allows occupants to store their winter gear near the door. The sleeping cots are double beds that can sleep two; however, there is a hinge that allows them to fold into chairs, and they can also be used as an eating platform. (see FIG.13.14)

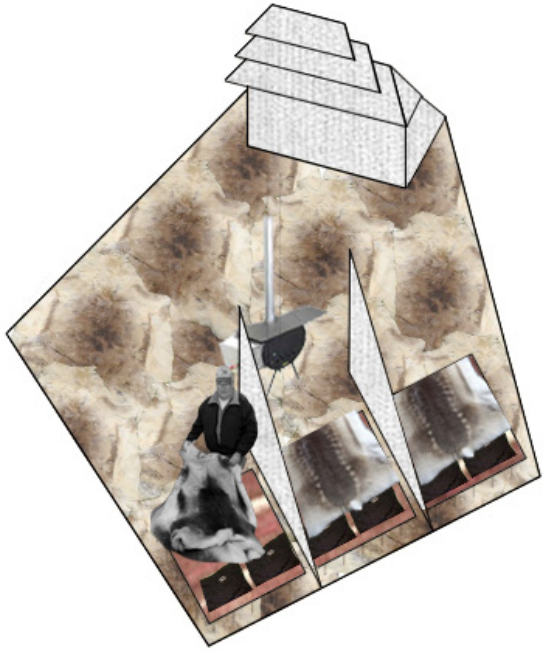


FIG.13.11. With partitions.

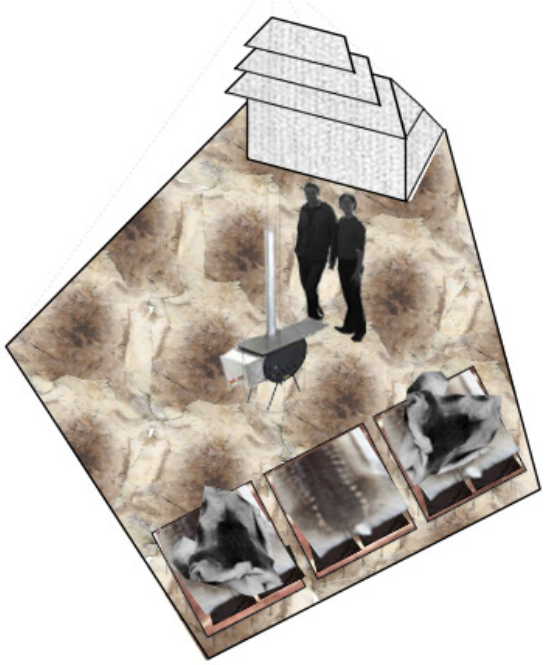


FIG.13.12. Without partitions.

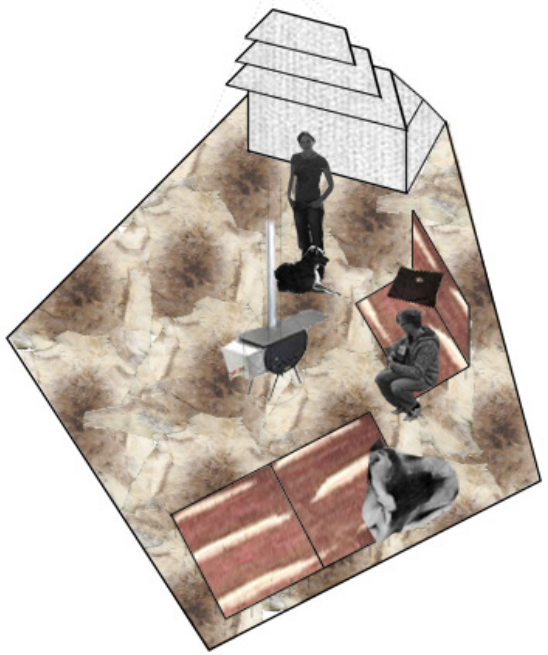
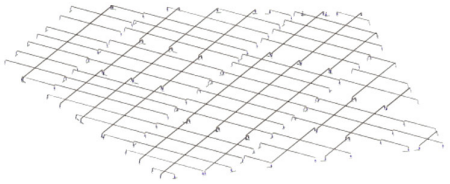
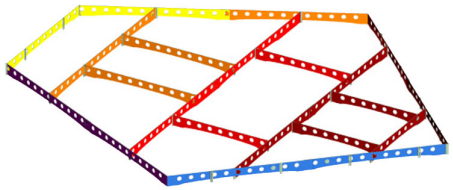


FIG.13.13. Without partitions.

Winter Configuration:
Components



Rope

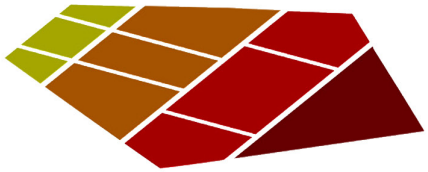


Frame

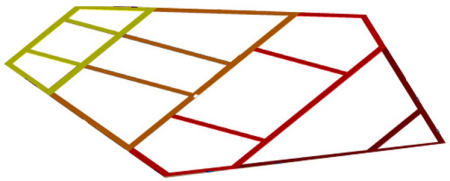
Bracket

FIG.13.14. Demonstrates all the components that make up the winter configuration.

Floor cover



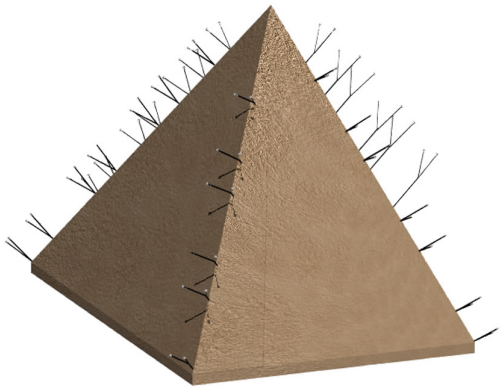
Floor



Top of frame

Ring

Poles



Tent

Winter Configuration:
Detail of Components

FIG.13.16. to FIG.13.18 Demonstrates all the individual components that make up the larger winter configuration.

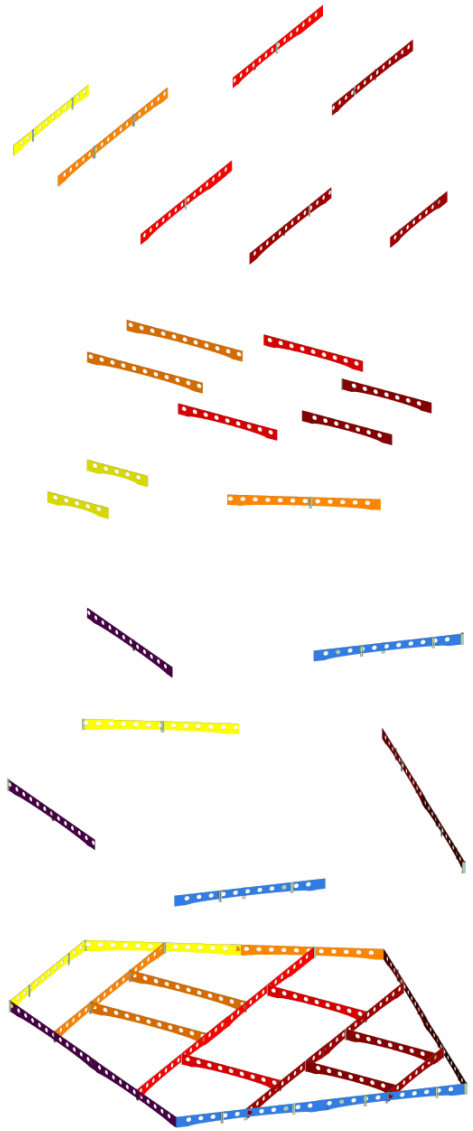


FIG.13.15. Frame.

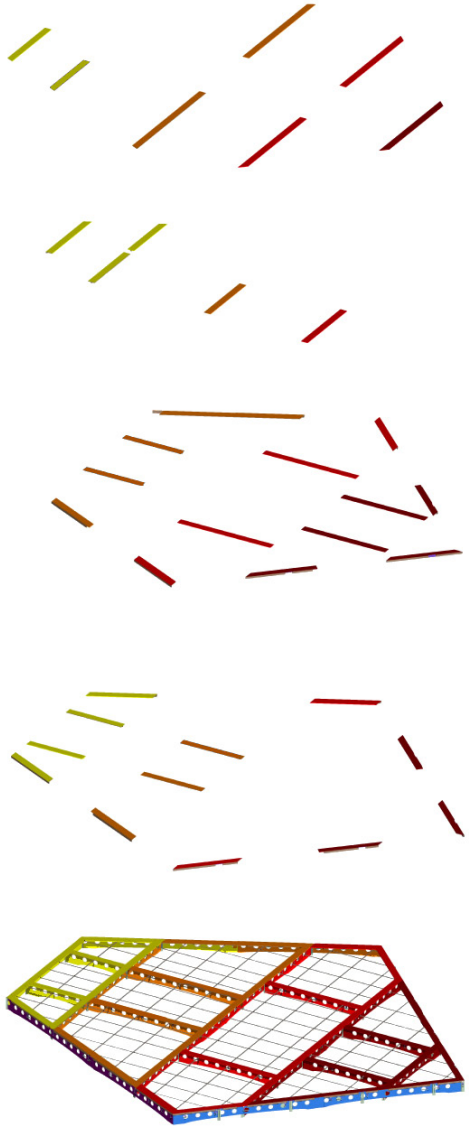


FIG.13.16. Top of frame.

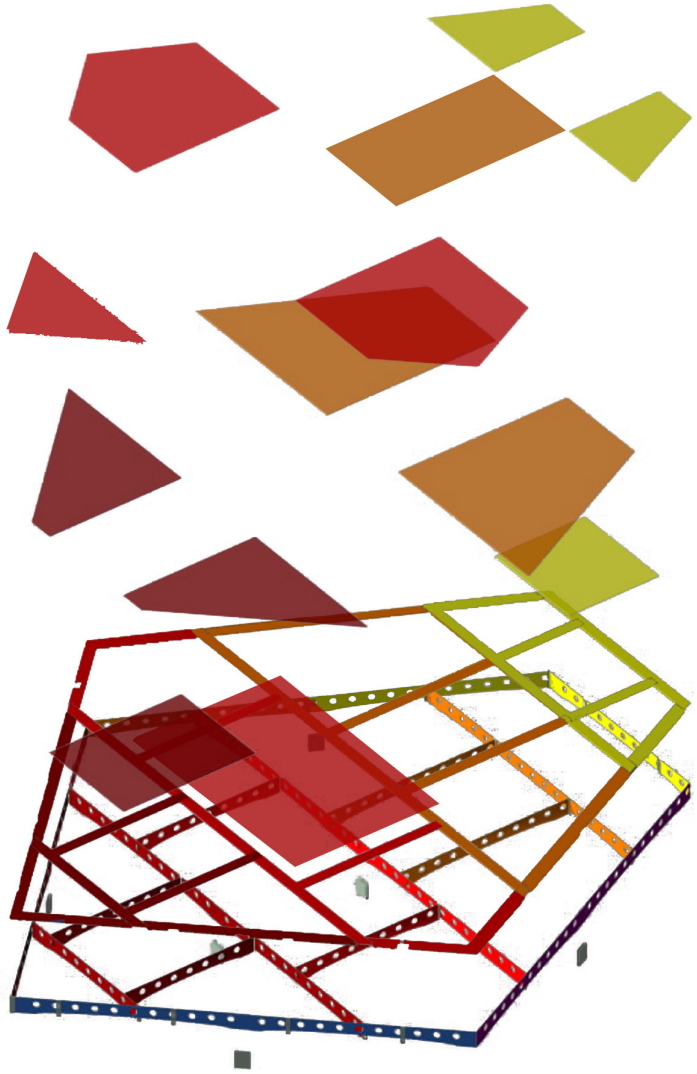


FIG.13.17. Floor.

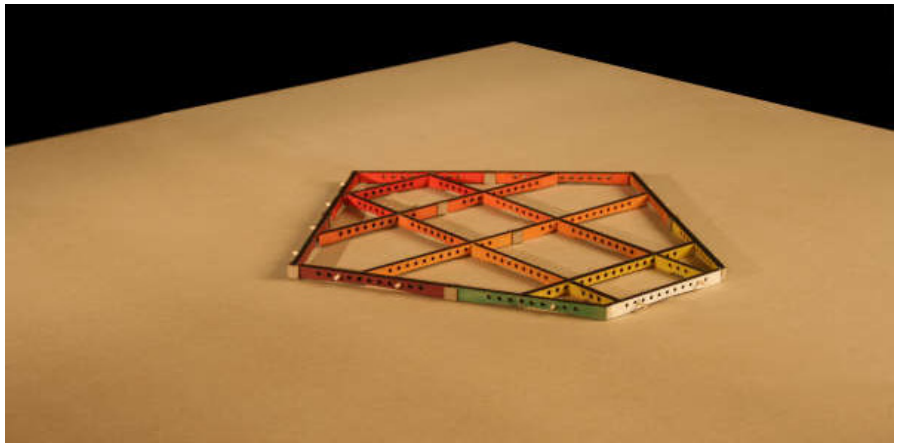


FIG.13.18. Physical model: frame.

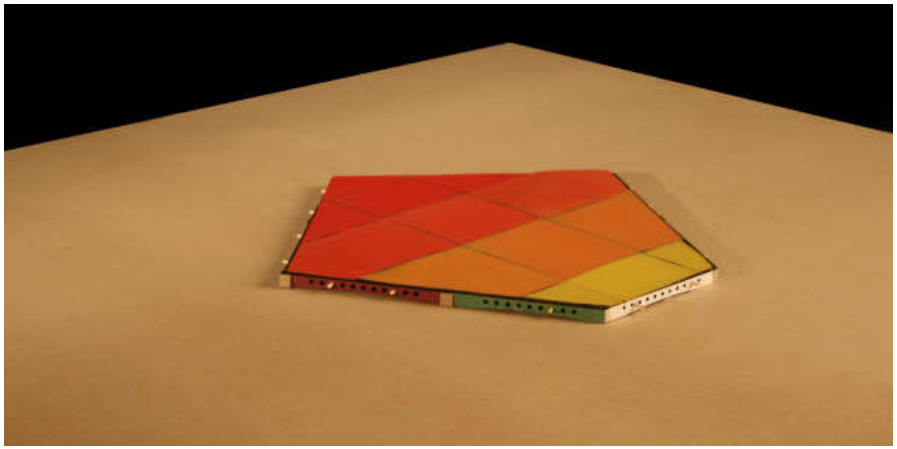


FIG.13.19. Physical model: floor.

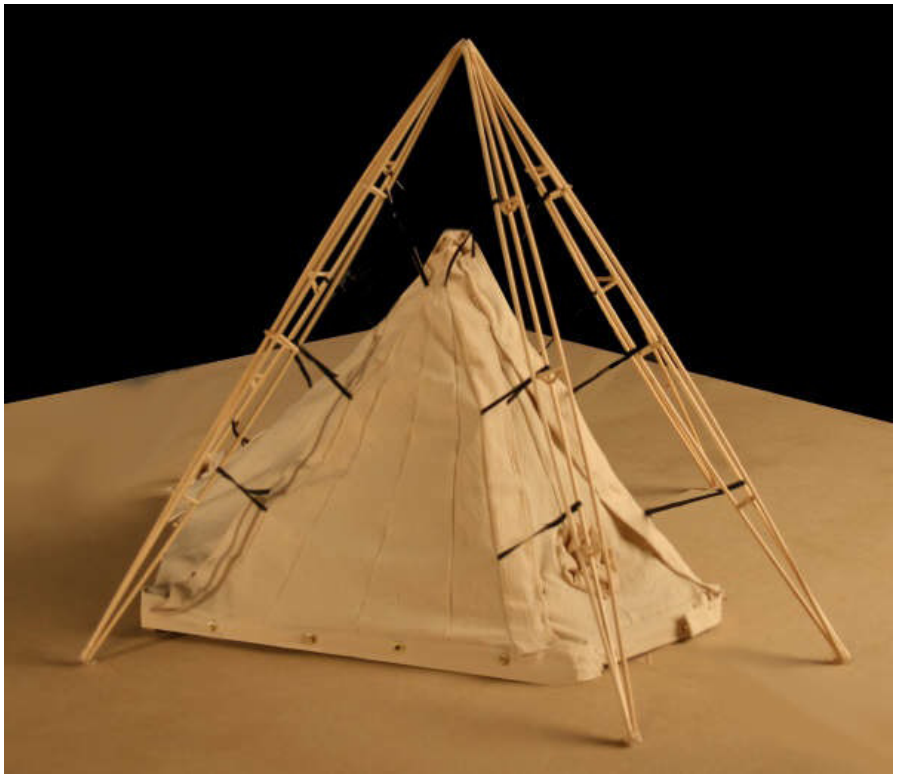


FIG.13.20. Physical model: tent.

Summer Configuration

The fluidity of relations formed by kinship, allows for groups to fluctuate their size of gathering, depending on the group's social and physical needs. The design takes these fluctuations into account; the summer tent structure can be used when families come together, especially in the summer months when families traditionally came together. At times, these groups would number as many as 200 individuals. In respect to herding, this would also be a time for the smaller herds to come together. It is also a time when the herd needs less direct supervision, and a larger gathering would be the perfect time for families to school their children.

FIG.13.21. Computer model, front veiw.

FIG.13.22. Computer model, rear view

The semi-permanent site pad is not unlike that seen in the post-contact pre-settlement period when groups built permanent structures and reoccupied them periodically throughout the year. In this case, just the pads the tents are on are lasting. The sites would be revisited during migration and calving, when the reindeer follow similar paths of travel annually.

The design has many key aspects of traditional architecture. The structure has the ability to adjust to suit the users' needs, the summer configuration allows for extended families to come together under one roof. Unlike the highly compartmentalized southern housing typology, a holistic approach will be more appropriate for a nomadic lifestyle — one which allows for flow within, where activities can be shared among household members.

FIG.13.23. Computer model, sectional view.

Summer Configuration:
Physical Model

FIG.13.24. Physical model, front view

FIG.13.25. Physical model, side view

Summer Configuration:
Interior Perspective

Not unlike the winter configuration, the interior perspective demonstrates the possible configurations within the structure that can be changed depending on the occupants' desires. The partitions hang from the wall of the tent and go to the ground, creating visual screens. The summer configuration allows for more choices, as there would be multiple families living together. For those families who prefer a more compartmentalized form of living, partitions can be arranged that allow each individual their own sleeping area (see FIG.13.24).

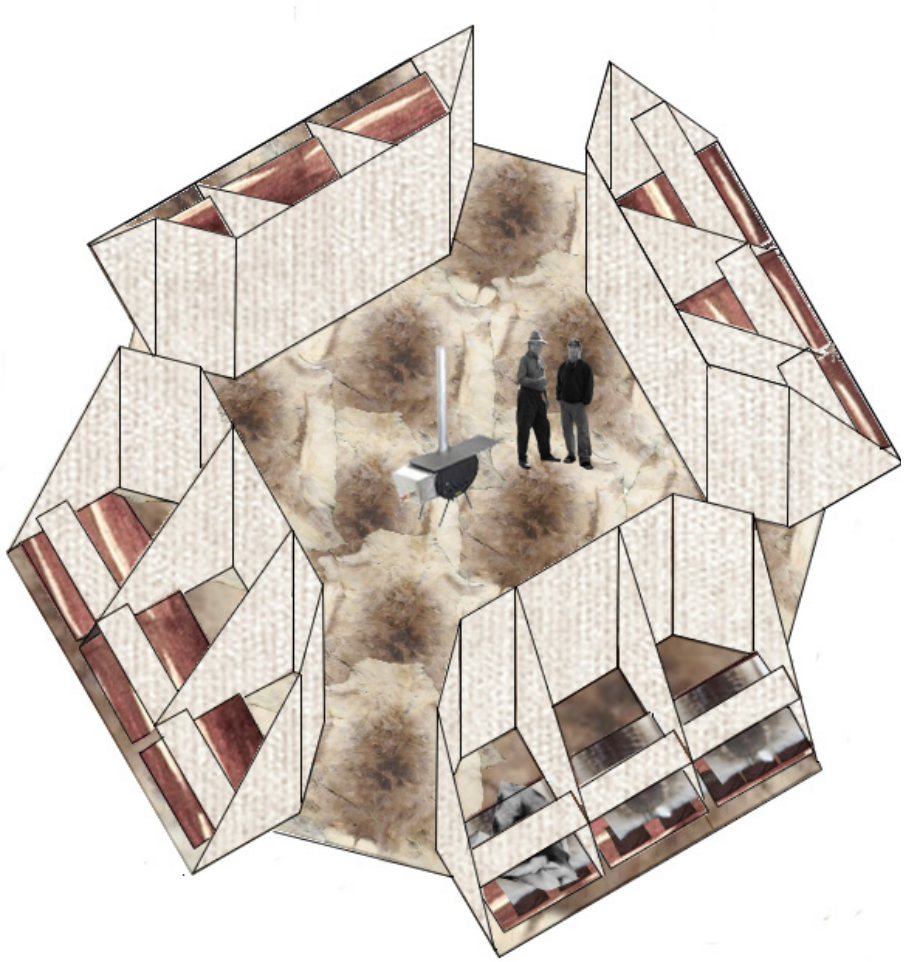


FIG.13.26. With partitions.

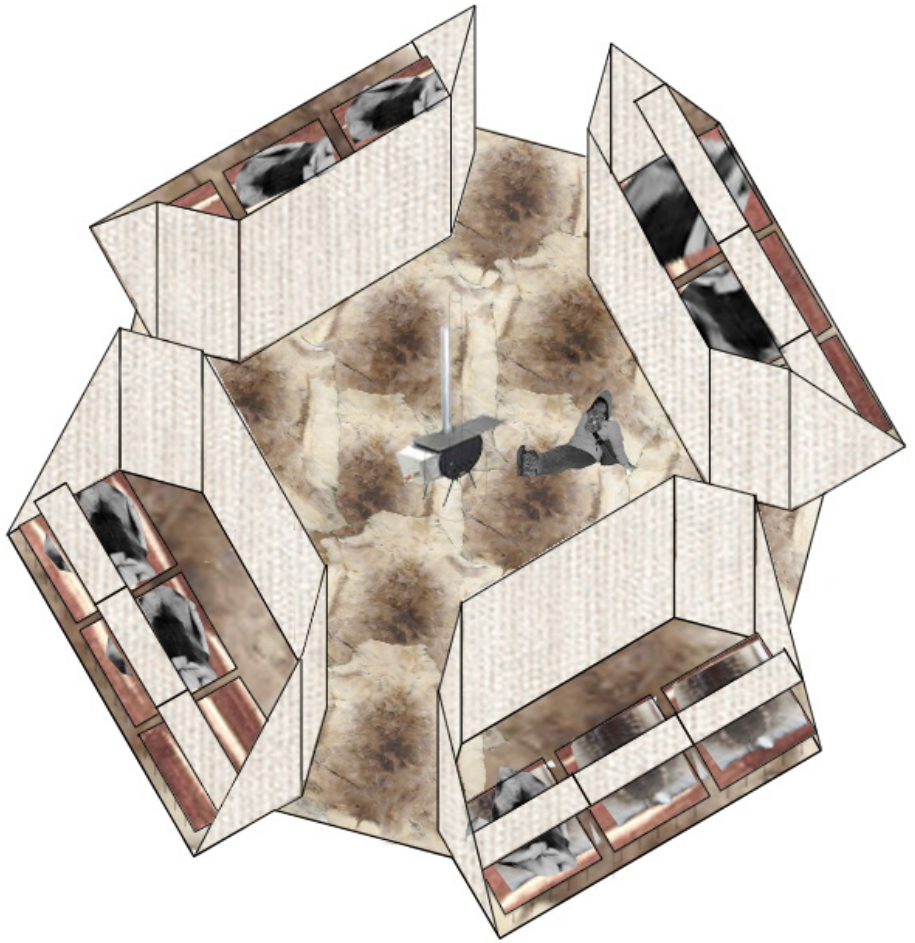


FIG.13.27. With some partitions.

If the occupants prefer a more modest amount of privacy, individual families may have their own sleeping areas (see FIG.13.25) and choose if the families want to live in one space without any partitions they can choose not to use them (see FIG.13.26). The summer configuration does not have an entrance way as the winter configuration does because wind does not pose a concern in the warmer months. There is also shelving within each cove where families can store items.

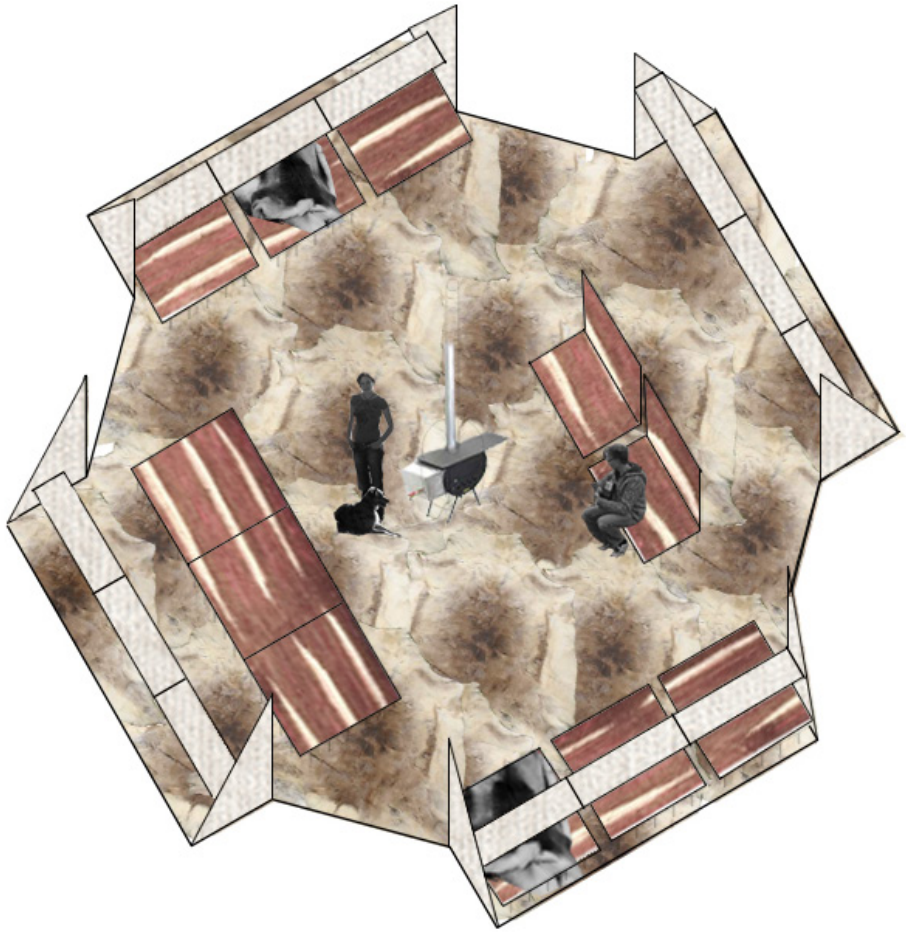


FIG.13.28. Without partitions.

Summer Configuration:
Components

It was during seasonal movements that cultural history was shared, as were life lessons. One of the key elements of this sharing was landmarks that would act as memory hooks; these hooks were as much a part of the culture as the stories themselves. The semi-permanent site pads would act as these hooks. They are a place that would be revisited throughout the year and they would act as reference point. With each passing, oral histories could be shared.

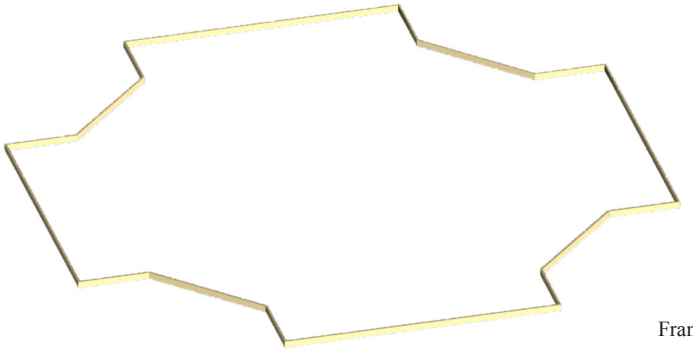
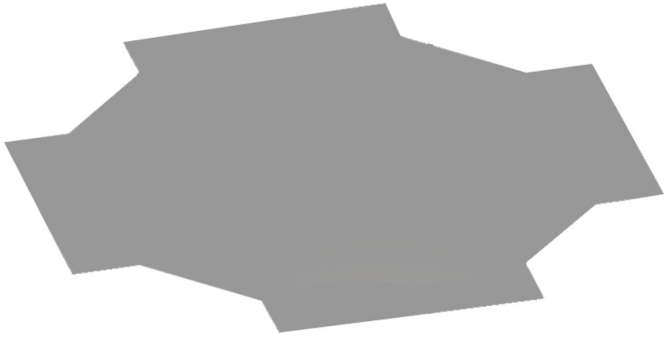


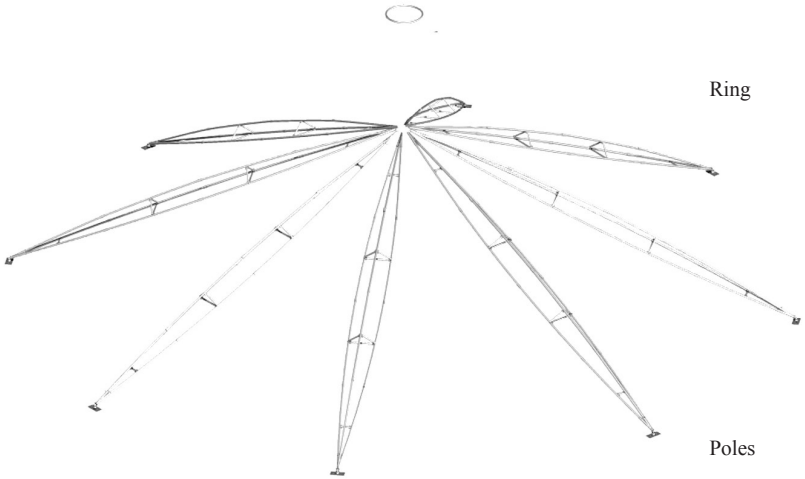
FIG.13.29. Semi permanent site pad

Fur floor cover



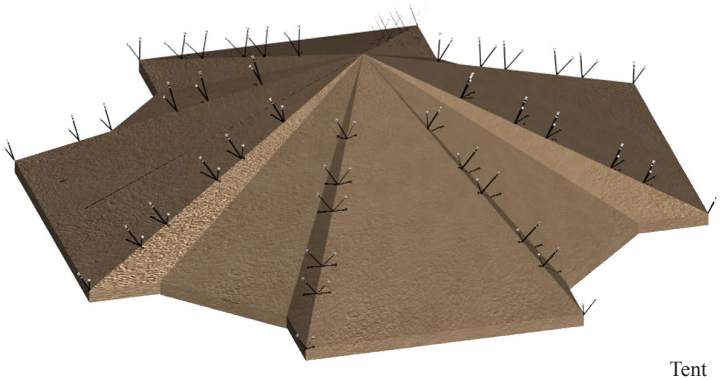
Floor

Filter cloth



Ring

Poles



Tent

FIG.13.30. Tent assembly

Materials

Simplicity is key. Simplicity of components, materials, and assembly will all aid in creating a user-friendly structure than can easily be assembled in all weather conditions. Materials were chosen for their ability to withstand cold weather, their durability, and their longevity.

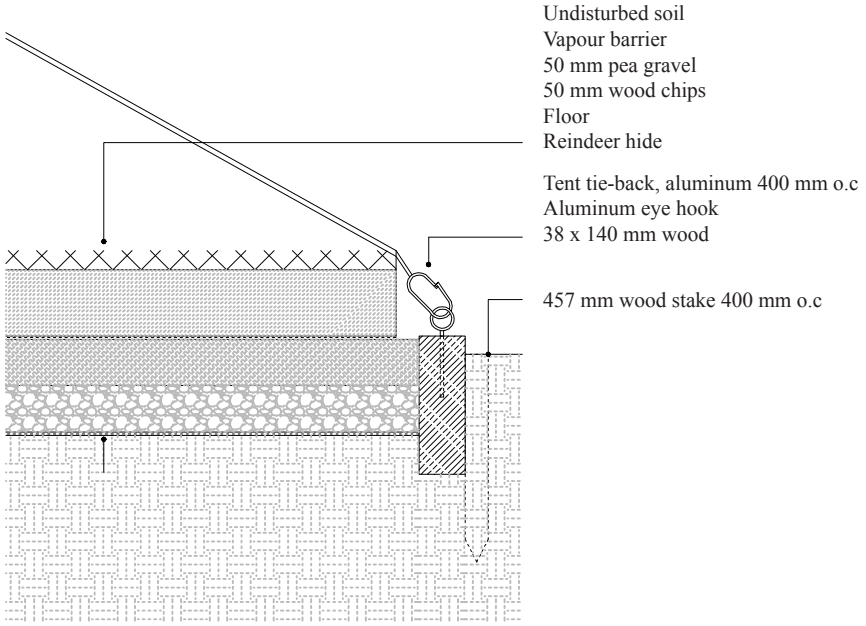
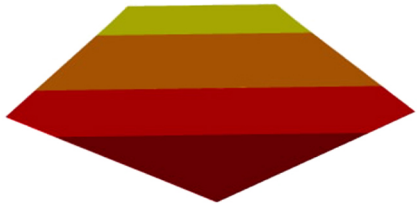


FIG.14.1. Summer pad detail.

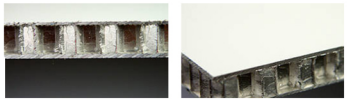
Materials:

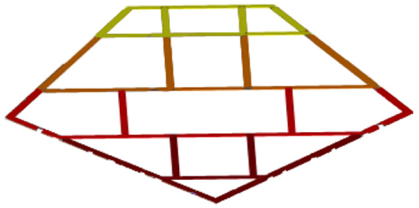
Winter Configuration



Floor

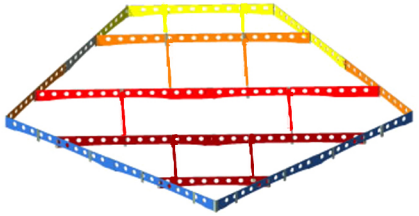
Manufacturer: Alcan
Product Name: Alucore





Beam Top

Manufacturer: Dragon Plate
Product Name: Custom Carbon Fiber



Beam

Manufacturer: Dragon Plate
Product Name: Custom Carbon Fiber

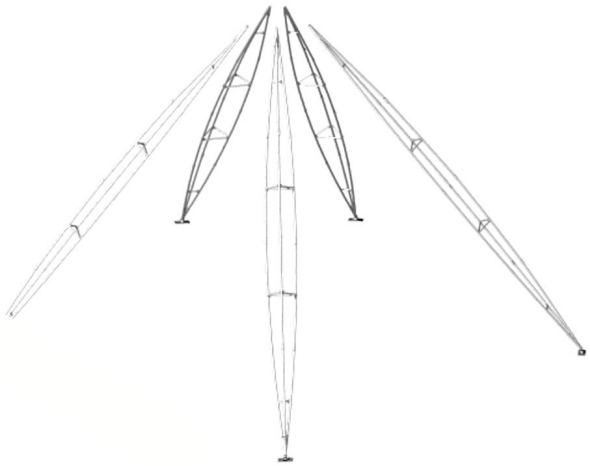
Bracket

Manufacturer: Dragon Plate
Product Name: Custom Carbon Fiber

FIG.14.2. Materials used.

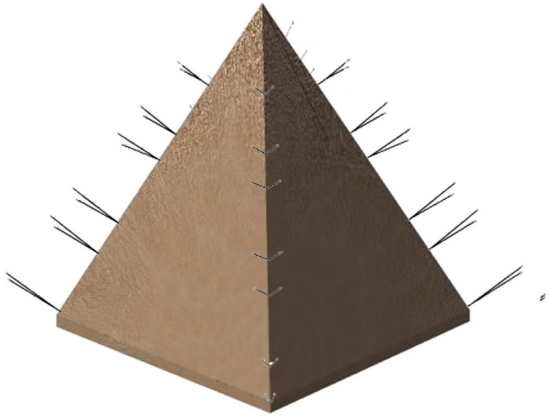
Floor

Manufacturer: Dragon Plate
Product Name: Custom Carbon Fiber Rods



Poles

Manufacturer: Dragon Plate
Product Name: Custom Carbon Fiber Rods



Fabric:

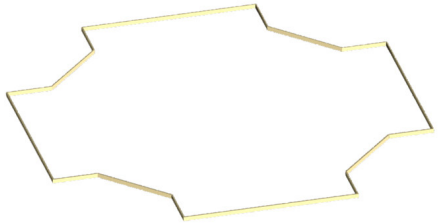
Manufacturer: Interglass
Product Name: 5000 TRL

Ties: Nylon

Clasps: Aluminum

Materials:

Summer Configuration

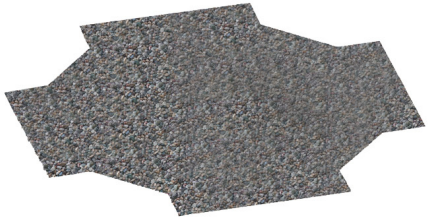


Floor

Source: Locally produced
2” x 6”

Mulch

Source: Locally produced



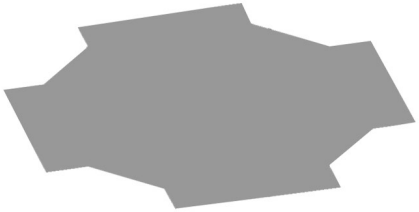
Pea gravel

Source: Locally produced

FIG.14.3.

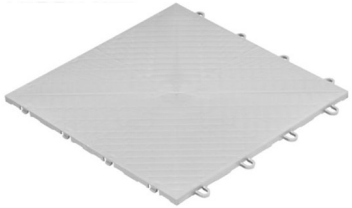
Finished Floor

Source: Locally produced
Reindeer Hide

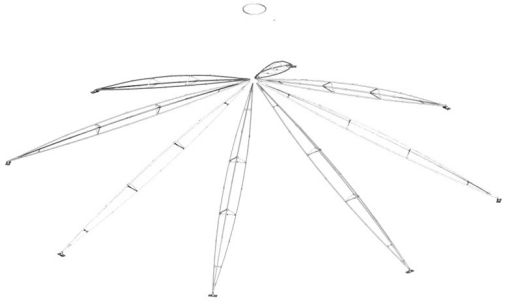


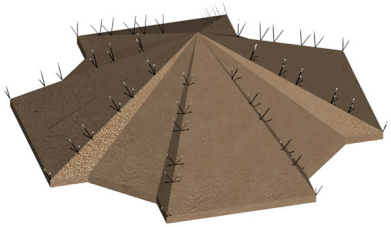
Floor

Manufacturer: Snaplock
Product: Floor Tile



Fabric





Poles

Manufacturer: Dragon Plate
Product Name: Custom Carbon Fiber Rods

Fabric:

Manufacturer: Interglass
Product Name: 5000 TRL

Ties: Nylon

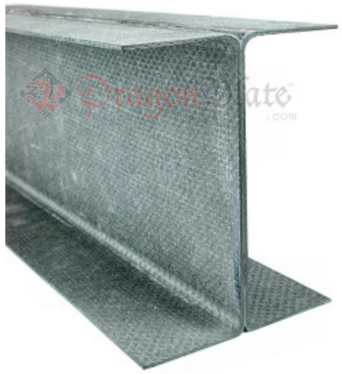
Clasps: Aluminum

Materials:

Product Information

Carbon Fiber C-Channel

Here at DragonPlate, we get many requests to replace aluminum components in structures to both reduce weight, as well as increase strength. Many customers wish to design a structure with common beam shapes made of carbon fiber. Carbon fiber c-channels are an excellent example. We have had many requests to fabricate carbon fiber c-channels to replace aluminum components. So, that's just what we did. DragonPlate now offers carbon fiber c-channels. Our carbon fiber c-channels utilize a 7 layer, quasi-isotropic laminate, giving them more torsional rigidity than I-beams or hat stiffeners. As with all of our engineered building materials, our carbon fiber c-channel has a very high strength to weight ratio, making it an excellent material for strengthening structures or frame construction. The uses for c-channels are endless, making them more versatile as a raw material than I-beams or hat stiffeners. Our c-channels sport a textured finish on both sides to provide an excellent bonding surface for any application.



I-Beam created by bonding two carbon fiber c-channels together

Like all DragonPlate products, custom sizes and thicknesses are available despite our standard offering. Due to the wide variety of uses for a carbon fiber c-channel, we expect many requests for thinner laminates for non-structural applications, as well as many custom widths. That is why we have developed proprietary universal tooling for our manufacturing process. This tooling allows for custom c-channels to be created with very minimal tooling costs. This tooling can currently produce c-channels from 2 to 7 inches wide, with leg lengths up to 1.75 inches.

FIG.14.4. Winter frame

Alcan Nederland BV Tel: +31 (0)765425200
postbus 3381 4800 Fax: +31 (0)765418899
DJ Breda The http://www.alucobond.com
Netherlands composites@alcan.com

Alucore

Alucore is a lightweight honeycomb panel, of which both core and cover sheets are made of aluminium. Alucore panels for facades, roofs and wall claddings are supplied as per project, starting with an order quantity of 700 m² available with a high–grade Fluorocarbon (e.g. PVDF) lacquer finish. Minor quantities and special colours are on request. Standards lengths are between 2050 and 6250mm, widths are 1250 and 1500mm. Alucore panels for industrial applications are supplied with high–grade polyester lacquering on both sides, making them highly suitable for additional coating, laminating or printing. Alucore can be processed with a wide variation of techniques: e.g. cutting, bending, folding, pressing, jointing, drilling and gluing. Alucore can be recycled without separating because it only contains aluminium.

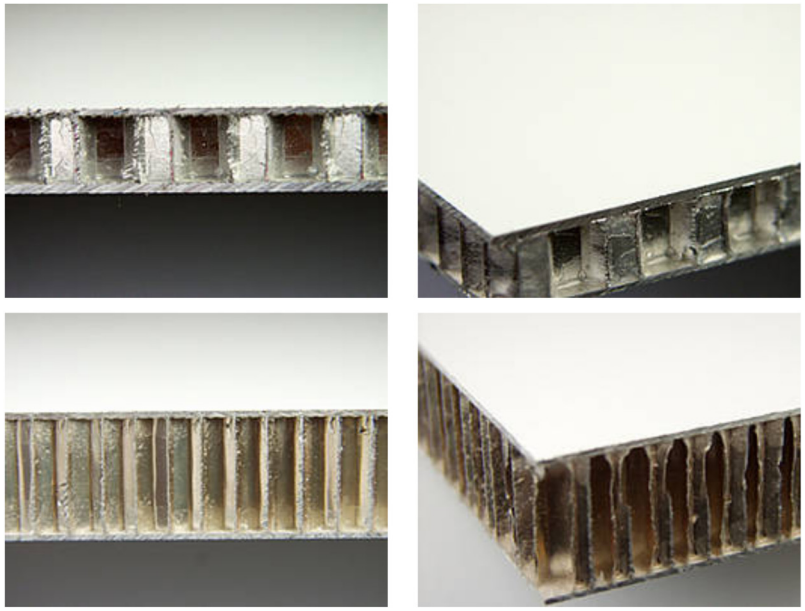
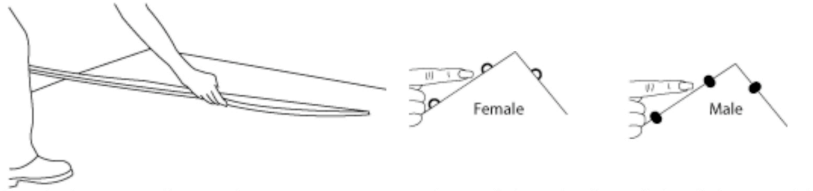


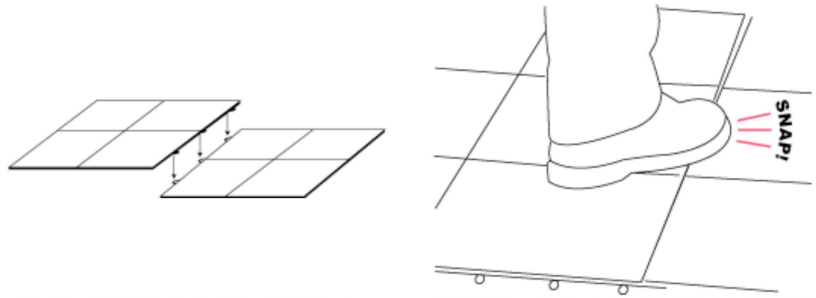
FIG.14.5. Winter floor

EASY INSTALLATION (NO TOOLS NEEDED)



Start by laying your first panel on any corner. The loops should be pointed in the direction you want to add panels.

The panels have 2 sides with female loops, and 2 sides with male pegs.



Place the next panel so that the pegs line up over the loops.

Gently step on each panel. You will hear and feel it snap into place. Repeat these steps until your flooring is complete. That's all there is to it!

All tiles on any given installation should ALWAYS HAVE THE FEMALE LOOPS GOING IN THE SAME DIRECTION. (illustration 1)

Illustration 1 (Right)

CAUTION: If you inadvertantly rotate a tile 90i it will snap into place (illustration 2) but you will not be able to complete the installation properly.

FIG.14.19. Summer floor

Carbon Fiber Small Tube

Pultruded in an epoxy resin, DragonPlate Carbon Fiber Tubes are exceptionally straight and rigid and are an ideal building material for frames, trusses and for use as reinforcing material. Because tubes are fundamental building blocks, they find great utility in the building of engineering and high performance structures, and work well in concert with DragonPlate Carbon Fiber Laminate.

DragonPlate Carbon Fiber Tubes are easy to work. They can be cut with a band saw, coping saw, scroll saw, end mill, or dremmel tool. Because DragonPlate Carbon Fiber Tubes are pultruded in an epoxy matrix they will bond readily with ScotchWeld 2216 epoxy resin.

QUANTITY DISCOUNTS

50 - 99, 10% Off

100+, 20% Off

PLEASE NOTE: Discounts will not be applied until after order is received.

- **24" length**
- **48" length**

FIG.12.6. Poles.

interglas Atex 5000TRL

BASE FABRIC			
Yarn	Glass fibre filament		100%
Thread count	Warp	8.4 per cm	DIN EN 1049
	Weft	7.3 per cm	
Weight	685 g/m²		DIN EN 12127
Weave style	Plain		DIN ISO 9354
COATED FABRIC			
Coating	Silicone		
Tensile strength	Warp	> 5000 N / 5 cm	DIN 12654
	Weft	> 5000 N / 5 cm	
Trapezoidal tear	Warp	> 400 N	DIN 53356
	Weft	> 400 N	
Weight	1165 g/m²		DIN EN 12127
Thickness	0.80 mm		DIN ISO 4603 / E
Width	2.00 – 3.00 m		
OPTICAL VALUES	Solar	Standard D65	
Transmission	18.4%	21.1%	DIN EN 410
Reflection	68.4%	74.7%	DIN EN 410
Absorption	13.2%	4.2%	DIN EN 410
FIRE RATING	Fabric		BS 476: Part 4
	Class 0		BS 476: Part 6: 1989, Part 7: 1997
	B1		DIN 4102
FABRICATING	Sewing with PTFE thread		
	Silicone adhesive tapes		Adhesive values
	5 cm × 0.75 mm		Peel 180° > 150 N / 5 cm*
			Tensile > 4000 N / 5 cm*
CHARACTERISTICS			
Temperature range	-50°C to +200°C		
Capillary rise	< 5 mm / 24 h (hydrophobic)		DIN 53 925
Thermal conductivity	0.1748 W/mk		DIN 52612/ASTM C 518
Thermal resistance	0.0050 m² K/W		DIN 52612/ASTM C 518
Lifespan	25+ years		
Water vapour transmission	62 g/m²/d (R.H. 40% 23°C)		DIN 52615 / ASTM E 96
	156 g/m²/d (R.H. 93% 23°C)		
	Weather-proof Hydrophobic UV light resistant		
	No toxic emissions No residual odours Easily cleaned		
	Lifespan 25+ years Dimensionally stable		
APPLICATIONS	For membrane structures, ceiling constructions, weather-proof awnings and facade covers with high translucency		

*depending on equipment, must be in accordance with specified adhesive tape grade and coordinated parameters.
(P-D Interglas may change these specifications from time to time subject to a programme of continuous improvement.)

Designed and produced by Cam Gerrish Creative +44 (0)117 966 6448

P-D INTERGLAS TECHNOLOGIES Ltd
Sherborne Dorset DT9 3RB England
tel: +44 (0)1935 813 722 fax: +44 (0)1935 811 822
e-mail: info@atex-membranes.com
www.atex-membranes.com

PVC FREE
ISO 9001:2000 Certificate No. Q 06085

FIG.12.7.. Tent fabric.

5000TRL

For membrane structures, ceiling constructions, weather-proof awnings and facade covers with high translucency

P-D INTERGLAS ATEX 5000 TRL is a high performance glass fibre fabric impregnated and coated with specially formulated translucent silicones for use as textile membranes, curtains, canopies and awnings. Silicone coated fabrics are very flexible over a temperature range of -50°C to +200°C and block out short wave UV-B light, harmful to humans, animals and plants, but transmit UV-A light, essential for plant growth.

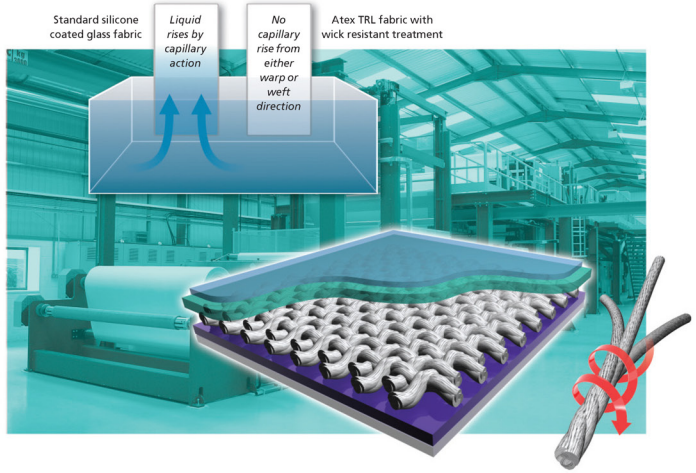
There are no emissions of toxic fumes or molten drips at high temperatures. The material is treated to resist wicking along the fibres for prolonged outdoor use and has a surface which improves soil resistance and handling during manufacture.

This combination of advanced technical qualities and its visual appeal makes ATEX 5000 TRL a unique and unrivalled product for structural membrane solutions now, and for the future.

ATEX 5000 grade is also available in a wide range of colours on request (subject to terms and minimum quantities).

GMPG Montreux – Airlight Ltd / Canobbio

Exhibition Breitling – Airlight Ltd / Canobbio



Conclusion: *Remembering The Earth for Tomorrow*

"Through many generations, Canadians have been singing of the nation in the North that stretches 'from east to western sea'. Surely the time has come for us to realize ¾ that the true North stretches to yet *another sea*; and that if we are to remain either strong or free, we must at long last take full and real possession of the neglected and rejected taiga, tundra and polar world, making it a veritable part of our nation and becoming part of it ourselves."[203]

In Farley Mowat's book 'Canadian North', he discusses the choices Canadians have to make regarding the North's development;

> 'Whether 'tomorrow' will only be a continuation of today ¾ a continuation of the process of despoilment for quick returns ¾ or development with a view to making it possible for many Canadians to live good lives in the magnificent lands [… of the North]: this is the question Canada must answer."[204]

This thesis attempts to address the question, by offering a vision of what Canada's north could be. Modern society has a tendency to move forward at a whirl-wind pace, without thinking about the long-term consequences today's actions will have on tomorrow. The focus of this work has been to take a step back and break the myths surrounding the North, and embrace the North not for what can be gained from it but for what can be learned from the people who call the North home. In doing so, opening up the possibility of learning how to exist within the natural world without destroying it.

The proposal of a low-key meat industry in the Northwest Territories is a real possibility. As explored in the body of this work, there have been studies that have supported the sustainability of this practice in Canada, and the economic success seen in Eurasia illustrates that this industry is economically feasible. The

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203 Mowat, 1967. Pg. 117.

204 Mowat, 1967. Pg. 86.

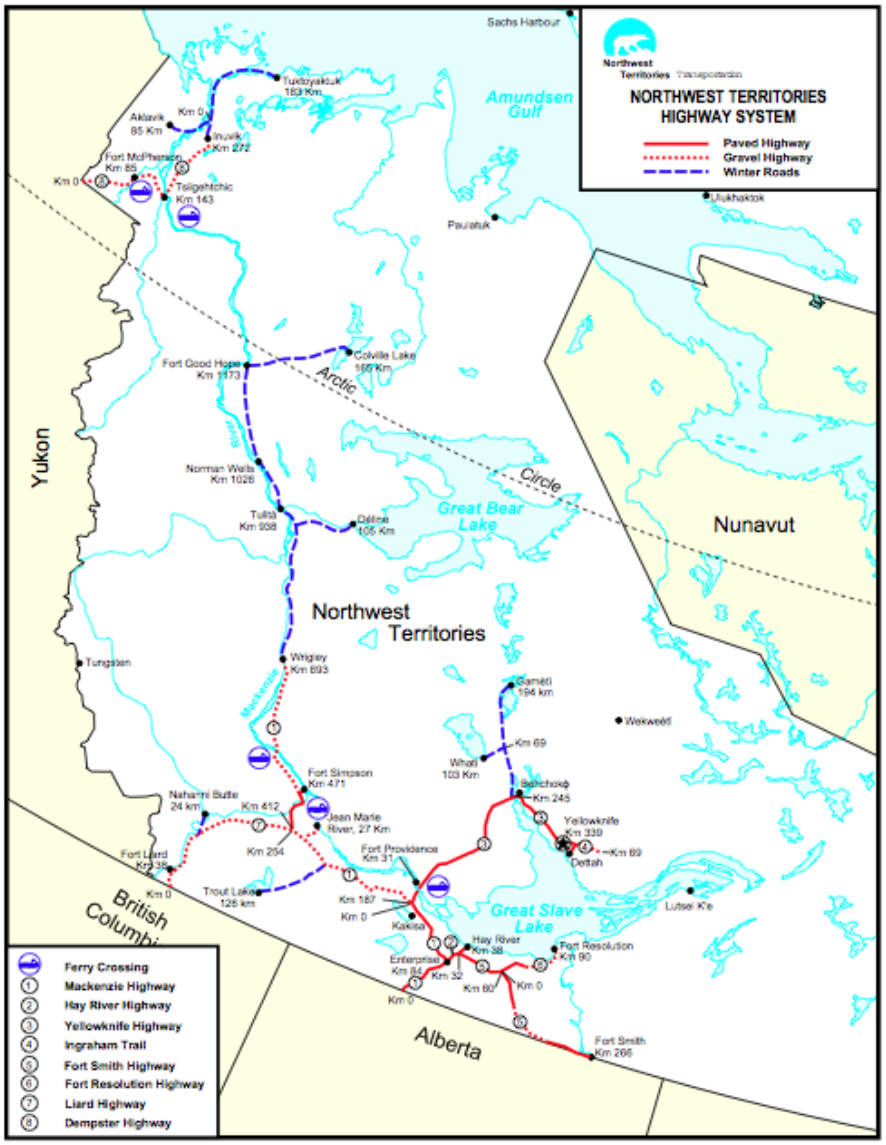

FIG.15.1. Hightway system demontrates existing infrastructure.

introduction of reindeer would bring a new life to Canada's north. In ten years a base herd of 8 000 head of reindeer would increase to 30 000 and produce a million pounds of meat annually, employing 4 000 people.[205] The approximate carrying capacity for the North is estimated at 2 million head of reindeer, given these numbers there is potential for a sustainable industry.

The present base economy for Canada's Northwest Territories is mining. As a result of this existing activity and the heavy equipment associated with mining, Canada's north already has the infrastructure in place that would be required for transporting meat and reindeer by-products. Active ice highways are open for approximately half of the year and connect to the Trans Canada Highway (see FIG.15.1). For several months of the year when the ice highways are closed, the northern seas also offer a means to ship meat to southern Canada and beyond, creating easy access to the potential market in the Pacific region. At present, there is no large-scale meat processing plants or meat rendering facilities in the Northwest Territories; however with the introduction of a low-key meat industry these plants would be required. The site for such plants would ideally be located in communities that have an existing land or sea transportation network, water treatment facilities, and near migration routes where culled reindeer could be herded for slaughter. Given these requirements, suitable communities may include: Yellowknife, Behchoko, Fort Smith, Hay River, and Inuvik. Further studies including an environmental assessment and community consultations would be needed to find ideal locations.

The government's current solution to create more employment for the northern aboriginal in the mining industry and on the pipelines has been met with mixed success; as those who anticipated these jobs are expected to leave their families for long periods of time, work underground, and work in jobs which they know negatively impacts the environment. As one young Dene describes,

"Lots of money to make in mines, […] if that's what you want. What we

205 Mowat, 1979. Pg. 168.

want is to live on the land like always, not down in a hole. Money is not so much. We think it is the way you live that counts."[206]

Setting aside western ideas of wealth based on dollars and cents and taking a different approach that measures ones self worth in terms of what is inside their heart and soul, strong family ties, and diversity of life, it is easy to understand why northern Aboriginals do not want to leave their communities to live in resource towns. Reindeer herding offers an alternative that maintains traditional aboriginal values.

The introduction of reindeer would reshape the northern landscape in a positive manner as the reindeer would help restore the North to its pre contact condition. They would distribute nutrients across their range, much as the 5 million caribou had done prior to pre contact period and the excessive over hunting that occurred following contact. The increase in nutrients would have a cascading affect that would benefit the entire ecosystem - creating greater biodiversity and a healthier environment, which would help save a number of northern species that are now on the brink of extinction. This industry would generate a greater diversity in the manner that the land is inhabited and the jobs available in the North. This strong economic foundation would be based in the North and other then the initial start up it would not be dependent on outside resources. Reindeer herding offers an industry that is stable in a time when the current employment opportunities vary greatly and are extremely unpredictable. As the global demand for protein continues to increase, and the current industries deplete, reindeer herding is a sustainable alternative, which can last forever.

206 Nabokov, 1989. Pg. 12.

Designing for the People

"The first houses built and most of their successors failed to accommodate aboriginal lifestyle: native people had to adapt their lifestyle to the house. In southern Canada a house design unadapted to the lifestyle of potential clients would disappear from the market within for want of a buyer. In northern Canada the potential client had no choice."[207]

The design's success is based on traditional principles and embodies traditional ideologies. Unlike southern housing types, the structure is a part of the environment - the occupants can hear, feel, touch, see and smell their surroundings. The land supports them, they move in time with seasonal change, they are a part of their environment. The semi permanent sites create markers in time and space that maintain tradition. Occupants will revisit them through the year, creating a sense of place and familiarity in the vast landscape. In keeping with traditional architecture the structure is flexible and fluid. As families come together and separate, the structure expands and contracts to meet the individual families' needs. The space, although small in comparison to southern housing types, provides every thing a family may need. When the Abnaki were asked to exchange their tepee for European type housing their chief replied,

> "Why now do men of 5 to 6 feet need houses which are 60 to 80...? Do we not find in our dwellings all the conveniences and advantages that you have in yours, such as reposing, drinking and sleeping, eating and amusing ourselves with our friends…"[208]

The flexibility of the design allows the occupants to use the space how they choose and the moveable partitions allow the family the ability to choose how or if at all they compartmentalize their space. The design is made of few materials, making it easy for the user to assemble and disassemble. The holistic approach to the design

207 Strub, 1996. Pg 14.

208 Nabokov, 1989. Pg. 96.

allows for a nomadic lifestyle that maintains traditional values, in which activities can be shared among household members creating a sense of mutual achievement; strengthen family bonds; and creating a simplistic, peaceful and fulfilling lifestyle.

Nomadic living is not for everyone, but those who have chosen that lifestyle, have found it very fulfilling. This thesis presents a balanced approach to living. We can learn a lot from those who call the North home, and in their stewardship nature and man have existed together harmoniously. Following traditional values and ethics is to follow a more dignified course of action, and these lessons can be applied anywhere not just in the North. If success in measured in terms of diversity, strong family ties and a meaningful connection with the land where both human and non humans can thrive side by side, then this proposal is a success.

Moving Forward

The next step, presuming both territorial and federal government support the proposal and are willing to stop the current industrial practice that is damaging the natural habit of the North, would be to conduct interviews with key individuals and groups who are involved with community development in the North. This interview would be the first step in creating a dialogue about alternative lifestyle and industry in the North.

Following the initial interviews, community meetings and work shops would offer an opportunity to generate interest in the project, as well as provide local residents with the opportunity to express any concerns they may have and provide feedback on the design. Following the first community meeting there would be an opportunity for redesign. The redesign would allow for changes based on community and stakeholders' concerns. During the redesign process it is important to involve the communities and stakeholders as much as possible giving them a chance to provide additional feedback at key stages. Holding community meetings and hosting design charrettes would allow the community members to be involved in the design process in a meaningful manner. The input from these meetings would be integrated into the final design that would be presented to the stakeholders and communities involved.

Future studies would be essential to map out and confirm the exact range of the reindeer as well as the maximum carrying capacity of each area to ensure no environmental damage is done. This could be completed in tandem with the redesign.

With the finalization of the design and additional completed studies the next step would be to carry out a test run, where one herd of 4 000 head would be introduced and six families would have the opportunity to participate. This test, which may last several years, would allow the families to provide first-hand feedback on elements of the design that are suitable for their families and those that are not. This test period would be an excellent opportunity to correct any design errors. Should the test run be successful, as the herd grows it can be subdivided and additional families can be involved. By growing incrementally, it allows the environment to

adjust, and also allows the industry to develop slowly giving community members the opportunity to learn essential skills and allow a market to grow.

This thesis proposal is not intended to be the best or only solution to the complex problems that are affecting Canada's north. Although it is idealist and utopian in nature, it offers a solution that is outside of the typical approach to addressing housing problems, failing economies, and social adversities that many northern communities are facing. The proposal is intended to open the door to the idea of alternative land uses that are sustainable and that embrace traditional values.

Epilogue

This thesis attempts to reconcile the relationships between the human culture of the North, the landscape from which the northern culture is based and the deliberate destruction of that landscape in the name of industrial development – the true cost of which remains unknown. I am not an economist, nor am I an ecologist; however I know there has to be a better solution, one that is different from the current path of environmental and spiritual destruction that is taking place in the North.

There is no argument that mining provides employment in the North, but the quality of life it offers is distressing. Barry Lopez who travelled extensively to the major mines in the Arctic describes those who work in the mines of the region, as "some of the saddest human lives I have ever know"[203] it is an ugly way of life, "the atmosphere in some of the camps is little different from the environment of a small state prison, down to the existence of racial cliques."[204] Mining does provide jobs and the wages are good, but the social environment created by these jobs is poisonous, drug and alcohol abuse, violence, and complete disconnection from ones family are the end result. The only ones who are truly benefiting are the large corporations.

How can we expect people to better themselves when the only options are to leave their homes and families to live in a morally and socially toxic environment or stay with their families and be unemployed. Barry Lopez, struggles with this question when he speaks candidly to a number of northern aboriginal miners,

> "The solution to this very old and disconcerting situation among the men I spoke to, when I asked was utopian. They believed in the will of good people. They thought some way could be found to take life-affecting decisions away from ignorant, venal, and unimaginative persons. Yes, they said, an innate not a tendered dignity put individuals in the best position to act, to think through the difficult problems of what to do about technologies

203 Lopez, 1989. Pg. 398

204 Lopez, 1989. Pg. 398

> that mangled people and mangled the land. But they did not know where you started, where the first, hard changes had to be made."[205]

The problem really lies with the people who are in power and are making decisions about the North and its land uses. They act without understanding- they think that if the natural resources are there they should be extracted. There is no simple answer, but the answer does not lie in mindless extraction of minerals and destruction of the environment. It is inconceivable to believe that, the debilitate degradation of the environment can be taken so lightly in the name of economic progress, especially seeing the impact on the northern Aboriginal culture.

My thesis is utopian, and perhaps fanciful, but what are needed are solutions that are imaginative and that think 'outside of the box'. By presenting a solution that is different, gives the people the power to act and react; it may not be the best or only solution but it addresses the issues facing the North: what to do about modern technology, over coming social adversities, creating economic well-being and repairing ecological destruction.

It has been several years since I last had the opportunity to visit the north, but I remember it with perfect clarity the extended periods of darkness that were never really dark. Hiking along moon lit trails as the night sky danced above, marveling at the low angle of the sun and the vastness of the landscape. Summer evenings spent wading into the river to reach 'our' island and stretching out on driftwood by the rivers edge, taking in the days that never end. These moments all offer instances of perfect mental clarity, the simplicity of these experiences are uncomplicated and cherished. I don't know what lies ahead for the future of the North, but I hope that our thoughtless destruction will end; I hope the North will be a place where we can co-exist with each other and with nature in a dignified way.

205 Lopez, 1989. Pg. 401

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